

Appendix D USFWS Biological Opinion; NMFS Concurrence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:

1-1-02-F-0311

November 15, 2002

Mr. Gary N. Hamby
Division Administrator
Federal Highway Administration, California Division
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

Subject: Formal Endangered Species Act, Section 7 Consultation on the Federal Highway Administration's Proposed Highway Improvement Project, State Routes 70-99-149-191, Butte County, California

Dear Mr. Hamby:

This letter is in response to your September 30, 2002, request to initiate formal consultation with the U.S. Fish and Wildlife Service (Service) for a proposed highway improvement project in Butte County, California. Your request was received in our office on September 30, 2002. The project proposes to realign and widen existing routes and rights-of-ways, construct freeway interchanges, and realign and/or construct access roads to privately owned parcels. At issue are the potential adverse effects to federally listed threatened and endangered species and their habitats including: the endangered Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*); the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*); the threatened vernal pool fairy shrimp (*Branchinecta lynchei*); the endangered vernal pool tadpole shrimp (*Lepidurus packardii*), and their proposed vernal pool critical habitat. This response is provided pursuant to section 7(a) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*), and in accordance with the regulations governing interagency consultations (50 CFR §402).

The Service also has considered information about other federally listed species potentially occurring within the proposed project area. We have determined the project, as proposed, will not adversely affect: the threatened California red-legged frog (*Rana aurora draytonii*); the threatened giant garter snake (*Thamnophis gigas*); the endangered Greene's Tuctoria (*Tuctoria greenei*); the endangered hairy orcutt grass (*Orcuttia pilosa*); or the threatened Hoover's spurge

(*Chamaesyce hooveri*).

The initial assessment of the project area indicated low potential for occurrence of the California red-legged frog. The lack of sightings in the vicinity of the project area, fast flowing creek flows, absence of ponds, intermittent characteristics of the drainages, and abundance of bullfrogs (*Rana catesbeiana*) likely preclude the California red-legged frog's existence in the area. Surveys following the Service's 1997 *Guidance on Site Assessment and Field Surveys for California Red-legged Frogs* at Little Dry Creek, Dry Creek, Clear Creek, Gold Run Creek, Cottonwood Creek (and associated beaver dam ponds) from May to October 1999 did not identify any California red-legged frog egg masses, larvae, juveniles, or adults. A search of the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDDB) confirmed the closest recorded location of the California red-legged frog to the project area is approximately 15 air miles away, in Plumas National Forest, northeast of Lake Oroville. It is the Service's opinion the California red-legged frog will not be adversely affected by the proposed action it is unlikely to be present in the proposed action area.

The giant garter snake requires habitat with adequate water during early-spring through mid-fall; emergent vegetation for cover and foraging, grassy banks and openings in waterside vegetation for basking, and adjacent upland areas for cover and refuge. Although the project area contains some of the aforementioned components, in general, the drainages under consideration do not exhibit characteristics normally associated with the presence of giant garter snakes. Site assessments determined that most of the drainages in the project area have fast moving flows and lack emergent vegetation. With the exception of the wetlands at the beaver dams, these drainages have steep, well-defined banks and lack adjacent connections to other wetland areas. There are currently no records of giant garter snakes occurring east of State Route (SR) 99, outside the concentration of rice lands, and the closest CNDDDB reported occurrences of giant garter snakes are 6.0-8.5 miles west/southwest of the project area near Nelson, California and/or in Butte Creek. Therefore, the Service believes the proposed project will not adversely affect the giant garter snake as it is unlikely to occur in the action area.

Botanical surveys were conducted in 1990, 1991, 1993, 1997 and 1999 by California Department of Transportation (Caltrans) biologists and in 1992 by a private consultant. Greene's tuctoria and Hoover's spurge were observed in a vernal pool known as Pentz Pool, located north of SR 99 near the intersection of SR 99 and Durham-Pentz Road. However, Pentz Pool is outside the proposed project area, including the 250-foot indirect effects boundary for vernal pools, and will not be affected by construction. Additionally, the same botanical surveys failed to locate any hairy orcutt grass, although it is recorded to occur in Pentz Pool. It is the Service's opinion that this project, as proposed, will not adversely affect Greene's tuctoria, Hoover's spurge, or hairy orcutt grass as they have not been documented to occur within the project boundary.

The biological assessment (*Biological Assessment, Butte 70/149/99/191, Highway Improvement Project, California Department of Transportation, Butte County, California. October 1, 2002*) did not address effects to the threatened Sacramento splittail (*Pogonichthys macrolepidotus*).

The species is known to occur downstream of the project area and was historically collected from as far upstream of the Feather River as Oroville, California (Rutter 1908). Implementation of the project, as proposed, is not likely to adversely affect the threatened Sacramento splittail as sightings of Sacramento splittail occurring as far north as their historic distribution have not been documented in recent years. Additionally, the overland distance of the project site to the Sacramento and Feather Rivers, the implementation of construction Best Management Practices (BMPs), and the timing of construction to occur during the typical dry season, per CDFG's 1601 Streambed Alteration Agreement, will reduce the potential for downstream effects (*e.g.*, sedimentation) such that these effects on Sacramento splittail can be considered discountable.

Unless new information indicates the proposed action will affect the California red-legged frog; giant garter snake; Greene's Tuctoria; hairy orcutt grass; or Hoover's spurge in a way not considered, no further consultation regarding them is necessary under the Act. If new information is discovered (*e.g.*, plants or pools are located during pre-activity surveys, *etc.*), the applicant must either ensure the project does not adversely affect these species and their habitats, or reinitiate section 7 consultation.

Threatened or endangered anadromous fish which may be affected by the proposed action are under the jurisdiction of the National Marine Fisheries Service (NMFS) and, therefore, are not considered in this biological opinion.

Additionally, the Service has considered information about the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) and the California tiger salamander (*Ambystoma californiense*), both candidate species for Federal listing. Surveys conducted since the 1980's indicate the western yellow billed cuckoo occurs along the Sacramento River and the Feather River. Given the proximity of the project area to these two rivers, the numerous riparian areas characterized by the presence of willow (*Salix* spp.) and cottonwood (*Populus* spp.), and the presence of other riparian obligate species such as the little willow flycatcher (*Empidonax trailii brewsteri*), it is possible that western yellow-billed cuckoos could occur or migrate through the project area. No western yellow-billed cuckoos were identified during the biological surveys. The Service concludes the proposed action may temporarily alter potential western yellow-billed cuckoo foraging and/or breeding habitat. Please be apprised of the protection afforded to migratory bird species such as the western yellow-billed cuckoo and the little willow flycatcher by the Migratory Bird Treaty Act of 1918, as amended, and its potential application to your project.

The endemic California tiger salamander may be the most vulnerable of the group of amphibians that breeds in rain pools. Its long developmental period may restrict its ability to reach metamorphosis in only the longest-lasting pools. Loss of vernal pools, fragmentation of pool complexes and introduction of exotic and transplanted species all have adversely affected the California tiger salamander. Pentz Pool, and pools adjacent to Gold Run Creek and the beaver ponds, are all long-lasting pools and likely provide potential habitat for the California tiger salamander. However, 1997 and 1999 surveys did not identify the presence of this species in the

project area. The nearest reported location in the CNDDDB is an isolated population at Grey Lodge Wildlife Management Area, approximately 20 miles southeast of the project area. It appears, based on the surveying effort, that the California tiger salamander does not currently inhabit the action area.

This biological opinion was prepared using the following information:

1. *Biological Assessment, Butte 70/149/99/191 Highway Improvement Project.* California Department of Transportation, October 1, 2002;
2. *Draft Environmental Impact Statement/Report, Highway Improvement Project, State Route 149, Butte County.* California Department of Transportation, May 30, 2002.
3. Meeting with representatives of the Service, Caltrans, and the Butte County Association of Governments (BCAG) discussing the timeline for the biological opinion, direct and indirect effects of the project, best manner in which to provide information to the Service about impacts, mitigation, and the development of a Habitat Conservation Plan (HCP) for Butte County, September 26, 2002;
4. Telephone conversations and electronic messages (email) between the Service, Caltrans, and BCAG employees regarding additional information required on listed species habitat and locations, minimization measures, and mitigation requirements;
5. Other references as cited in this biological opinion; unpublished information contained in Service files; personal communications with species experts and Service employees familiar with the project.

A complete administrative record of this consultation is on file at the Sacramento Fish and Wildlife Office (SFWO). Please refer to file number 1-1-02-F-0311 when requesting information concerning this consultation.

Consultation History

January 23, 1992. Meeting with California Department of Transportation (Caltrans), California Department of Fish and Game (CDFG), and the Service (J. Knight) to discuss Butte County highway improvement project and impacts to special status species.

April 1997. Interagency meeting with U.S. Army Corps of Engineers (Corps), CDFG, U.S. Environmental Protection Agency (EPA), and the Service (K. Tarp) to discuss the project purpose and need, and the range of alternatives.

October 1999. Service provided written concurrence with the project purpose and need, range of alternatives, and criteria for selection of alternatives.

March 2001. Service informed of a project design change to avoid impacts to a historic district.

June 25, 2002. Service receives draft environmental impact statement/report for review and comments.

August 29, 2002. Meeting with Corps, EPA, NMFS, the Service, Caltrans, and Federal Highways Administration (FHWA) to discuss concurrence on of Alternative #3 to avoid all direct impacts to Butte County meadowfoam.

September 17, 2002. Service receives draft biological assessment for the proposed action.

September 26, 2002. Service personnel (R. Gerson, M. Fris, and H. McQuillen) met with representatives from Butte County Association of Governments (J. Clark, Executive Director), and Caltrans representative (K. Asije) to discuss the timeline for completing the biological opinion, the appropriate compensation, and the development of an HCP to address the growth-inducing effects of the proposed action.

October 1, 2002. Service receives final biological assessment from Caltrans.

BIOLOGICAL OPINION

Description of the Proposed Action

Caltrans and the Federal Highway Administration (FHWA) are proposing a highway improvement project on SR 149 in Butte County, California, between the cities of Chico and Oroville. The proposed project would upgrade the last remaining two-lane stretch of SR 149 to a four-lane expressway, construct freeway-to-freeway interchanges at the existing SR 70/149 and SR 99/149 intersections, and realign and/or construct access roads to privately owned parcels along the route. The improvements are proposed to reduce traffic congestion and improve safety and would include the following:

- a. Construction of two additional lanes (12-foot each), one 10-foot outside shoulder, one 5-foot median shoulder, and one 60 to 72-foot median for the full length of SR 149 (4.6 miles). This would expand the width of the existing roadway from approximately 40 feet to approximately 150 feet.
- b. Construction of two-lane bridges with shoulders on SR 149 over Dry Creek, Clear Creek, and Little Dry Creek;
- c. Rehabilitation of the existing SR 149 roadway;

- d. Extension of double reinforced concrete box culvert over Gold Run Creek at SR 149 and single reinforced concrete box culvert over Cottonwood Creek at SR 149;
- e. Realignment of SR 70 between SR 149 and SR 191 approximately 360 feet, at the widest offset, west of its current location;
- f. Construction of a four-lane bridge with shoulders on new SR 70 alignment over Gold Run Creek;
- g. Construction of freeway-to-freeway interchanges at the existing SR 70/149 and 99/149 intersections;
- h. Realignment and reconstruction of the SR 70/191 intersection approximately 164 feet east of its current location. This intersection would become a 4-way intersection comprised of north and southbound SR 70, SR 191, and the realigned Table Mountain Boulevard (currently existing SR 70);
- i. Realignment of Table Mountain Boulevard by connecting it to the existing SR 70, which would then become a frontage road connecting to the new SR 70/191 intersection after the new alignments of SR 70/191 are complete;
- j. Realignment of Shippee Road, near its intersection with SR 149, to the east of its current location to allow adequate distance between the intersection and the SR 99/149 interchange. The old alignment is proposed to be abandoned.
- k. Construction of a one-lane crossing over SR 149 to Openshaw Road to maintain access to the driveways of the Warren (APN 041-210-052) and Brown (APN 041-200-041) parcels;
- l. Construct a frontage road on the west side of SR 99 north of the SR 99/149 interchange to maintain access to the Book (APN 040-057-003), Guidici (APN 040-130-011), and Dry Creek Ranch (APN 040-057-004) parcels. This road would continue north to the intersection of Durham/Dayton Highway and Oroville/Chico Highway;
- m. Construct driveway access on the east side of SR 99 from just north of the SR 99/149 interchange, southeast to Openshaw Road to maintain access to the Schlaf parcel on the east side of SR 149 (APN 040-130-040)
- n. Construct driveway access on the east side of SR 99 from just south of the SR 99/149 interchange to approximately 1640 feet north of the Dry Creek Bridge on SR 99 to maintain access to the Schlaf parcel on the east side of SR 99 (APN 041-

190-027);

- o. Acquire approximately 335 acres of additional right of way from approximately 35 parcels of land to accommodate the proposed action.

This project is located within the United States Geological Survey's (USGS) Cherokee, Hamlin Canyon, Shippee, and Oroville 7.5-minute quadrangle maps (predominantly T20N, R3E). The work is scheduled to be completed between April 15 and October 15 of each of the next three years, with the exception of work within vernal pools which will begin no earlier than May 15 and/or as determined by the on-site Service-approved biologist.

The Service defines the action area of the proposed project to include the portion of SR 99, between the Durham-Pentz Road on the north to Dry Creek to the south; all 4.6 miles of SR 149, the portion of SR 70 from SR 191 on the north to Campbell Creek on the South, and all areas out to a minimum of 250 feet on both sides of the aforementioned roadways including their realignments, improvements, expansions, and any interrelated and interdependent effects resulting from this project including, but not limited to, downstream effects, urban expansion areas, natural areas converted to agricultural land, and any other effect reasonably certain to occur in the foreseeable future. A complete description, including maps, of the project area is described in detail in the *Biological Assessment, Butte 70/149/99/191 Highway Improvement Project (October 1, 2002)* and the *Draft Environmental Impact Statement/Report, Highway Improvement Project, State Route 149, Butte County (May 30, 2002)*.

Environmental Setting

The majority of the project area is primarily flat terrain with some rolling hills and numerous watercourses to include Clear Creek, Dry Creek, Gold Run Creek, Cottonwood Creek, and Campbell Creek, all of which eventually drain into the Sacramento River. Elevation generally ranges from 120-250 feet. The rolling hills and mound topography of the region are punctuated with both narrow and broad swales underlain by both Tuscan-Anita and Red Bluff-Igo soil complexes. This combination of features supports the establishment of individual vernal pools and swale complexes.

The project area contains twelve different plant community types; four upland communities including agricultural land, ruderal grassland, annual grassland, and valley oak woodland; four wetland community types including vernal pools and swales, marsh, mixed riparian and "other wetlands"; two types of non-wetland waters consisting of unvegetated channel and riparian; and two types of man-made habitats including ponds and roadway drainages.

The upland communities are comprised of common plant species including agricultural crops, yellow star thistle (*Centaurea solstitialis*), wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), rye (*Lolium multiflorum*), chicory (*Cichorium intybus*), prickly lettuce (*Lactuca serriola*), vetch (*Vicia sativa* var. *sativa*), valley oak (*Quercus lobata*), interior live oak (*Q.*

wislizenii), and blue oak (*Q. douglasii*).

Vernal pools and swale complexes occur throughout the project area, with the highest densities of pools occurring in the vicinity of Gold Run Creek and along the north side of SR149 between Clear Creek and the SR 149/99 intersection. Characteristic plant and animal species include annual hairgrass (*Deschampsia danthonioides*), goldfields (*Lasthenia* sp.), toad rush (*Juncus bufonius*), white-headed navarretia (*Navarretia leucocephala*), stalked popcorn-flower (*Plagiobothrys stipitatus* var. *micranthus*), dwarf sack clover (*Trifolium depauperatum*), Sacramento mesa-mint (*Pogogyne zizyphoroides*), coyote thistle (*Eryngium vaseyi* var. *vallicola*), Fremont's tidy-tips (*Layia fremontii*), butter-and-eggs (*Triphysaria erianthus*), downy navarretia (*Navarretia pubescens*), dwarf woolly-head (*Psilocarphus brevissimus*), vernal pool tadpole shrimp, and vernal pool fairy shrimp.

Marsh habitat occurs scattered throughout the project area in association with seeps, vernal pools and swale habitat, along slow moving creeks, and in artificial settings such as stock ponds and roadway drainage ditches. These seasonal freshwater marshes are dominated by Baltic rush (*Juncus balticus*), creeping spikerush (*Eleocharis macrostachya*), tall flatsedge (*Cyperus eragrostis*), sedge (*Carex nebraskensis*), lady's thumb (*Polygonum persicaria*), dallis grass (*Paspalum dilitatum*) and rabbits foot grass (*Polypogon monspeliensis*).

Mixed riparian occurs in association with Little Dry Creek, Clear Creek, Dry Creek, Gold Run Creek and Cottonwood Creek. These areas are dominated by an overstory tree canopy of willow (*Salix bonplandiana* and *S. gooddingii*), Fremont's cottonwood (*Populus fremontii*), white alder (*Alnus rhombifolia*) and valley oak; a shrub layer of sandbar willow (*Salix exigua*); and an understory of wet grasses, sedges and spikerush. Large areas of this habitat type occur near the SR 70/149 interchange in association with Gold Run and Cottonwood Creeks and their tributary drainages. Large areas also occur along Dry Creek, from the existing highway crossing, upstream along the portion of the drainage that runs parallel with Openshaw Road.

Riparian vegetation is dominant along Campbell and Clear Creeks and is found in association with other vegetation community types along the other drainages in the project area. Non-wetland riparian vegetation in the area includes patches of willow, mulefat (*Baccharis salicifolia*), and Himalayan blackberry (*Rubus discolor*) with scattered Fremont's cottonwood, California black walnut (*Juglans californica* var. *hindsii*) and Oregon ash (*Fraxinus latifolia*) trees. Grasses and forbs include mugwort (*Artemisia douglasiana*), cocklebur (*Xanthium strumarium*), common chickweed (*Stellaria media*) and willow herb (*Epilobium ciliatum*) dominate understory vegetation.

Roadway drainages occur throughout the project limits. Plant species identified in these areas include nut sedge (*Cyperus eragrostis*), verbena (*Verbena officinale*), seep monkey flower (*Mimulus guttatus*), dallis grass, rabbits foot grass, and lady's thumb. Shallow depressions in roadside ditches are characterized by vernal pool and swale species such as stalked popcorn flower, navarretia, and dwarf woolly-head.

There are three locations in the project area where wetland resources were identified as “other wetlands.” Two areas occur in pasturelands that either receive augmented irrigation water or occur behind a berm that backs up flows, causing ponding. Both of these areas occur adjacent to vernal pool and swale complexes and likely have an impervious soil layer present. The common species are dallis grass, stalked popcorn flower, Sacramento mesa-mint, buttercup (*Ranunculus canus*), hyssop loosestrife (*Lythrum hyssopifolia*) and knotweed (*Polygonum sp.*).

Proposed Conservation Measures

Best Management Practices

Caltrans has proposed to implement a suite of BMPs following Caltrans’ *Storm Water Quality Handbooks: Project Planning and Design Guide, Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WRCP) Preparation Manual, and Construction Site Best Management Practices (BMPs) Manual* (Caltrans 2000). The BMPs will consist of some or all of the following: scheduling restrictions (Caltrans 2000); preservation of existing vegetation; hydraulic mulching; hydroseeding; placement of soil binders, straw mulch, geotextiles, plastic covers and erosion control blankets/mats; construction of earthen dikes/drainages swales and lined ditches; construction of outlet protection/velocity dissipation devices, slope drains, silt fence, desilting basins, sediment traps, check dams, fiber rolls, and gravel bag berms; use of water conservation practices; regulation of dewatering, paving and grinding operations; detection and reporting of illegal connections and/or connection discharges; restrictions on vehicle and equipment cleaning, vehicle and equipment fueling, vehicle and equipment maintenance restrictions; controls on material use, stockpile management, spill prevention and control; standards for solid waste management; and measures that address concrete waste management.

Proposed Butte County Meadowfoam and Vernal Pool Crustaceans Conservation Measures

- a. The project design includes increasing slope angles of the road sides, constructing retaining walls, and reducing fills to avoid or minimize effects to vernal pool species and their habitats within the right of way;
- b. Construction work occurring in areas with the potential to affect vernal pools or swale complexes will be restricted to the roadway side of cut and fills. Cut and fill is defined as the area between the edge of the roadway surface and the distal edge of the embankment. No topography or drainage patterns will be altered outside the limits of cut and fill;
- c. Areas beyond the limits of cut and fill slopes will be designated as Environmentally Sensitive Areas (ESAs) to be avoided by work (Figure XX from K. Nelson). The work area and limits of the cut and fill will be fenced as a visual and physical barrier to construction vehicles, equipment, and personnel;

- d. Caltrans will maintain existing hydrologic connections and flow patterns on all sides of all roads within the project footprint;
- e. Construction work occurring in vernal pools and swale complexes will be restricted to the dry period only;
- f. A site specific Storm Water Pollution Prevention Plan (SWPPP) shall be developed and implemented as required by the Caltrans Statewide Non-Point Discharge Elimination System (NPDES) Permit and the State Construction General Permit. The SWPPP shall apply to all areas that are directly related to the construction activity, including, but not limited to, staging areas, storage yards, material borrow areas and storage areas, access roads, *etc.*, whether or not they exist within the Caltrans right of way. The project site shall be monitored and inspected in accordance with the provisions of the NPDES Permit;
- g. All “in-water” work will comply with the State Water Control Boards, Central Valley Basin Plan, which includes water quality standards and recommended control measures for use by the other local, State or Federal agencies. In addition, the contractor’s work will need to comply with the water pollution protection provisions of Section 7-1.01G of the Caltrans Standard Specifications, as well as all conditions contained within regulatory permits;
- h. Prior to excavation, temporary erosion control fencing will be placed down slope of areas where disturbance of native soil is anticipated. The temporary fence will be maintained in a functional condition until soil disturbance activities are completed and permanent erosion control is applied. Loose soil built up behind the fencing will be incorporated into the slope or taken off site;
- i. Native California shrub, forb and grass species will be collected from the vicinity of the project (same elevation and geographic area) and will be used for all revegetation efforts. Mulches used on the project will be from source materials that will not introduce exotic species. No wheat, barley or rice straw shall be used on the project because of the potential to introduce weeds. Erosion control will be considered functional when a uniform vegetative cover equivalent to 80 percent of the native background vegetation coverage has been established, or equivalent stabilization measures have been employed;
- j. Existing vegetation will be maintained to the maximum extent possible;
- k. The top 12 inches of topsoil (duff) shall be stockpiled (where feasible and appropriate under the discretion of the Landscape Architect) and replaced prior to placing permanent erosion controls;

- l. Disturbed areas will be re-stabilized according to Landscape Architecture and Maintenance recommendations for each phase and stage of construction;
- m. Dust control shall be applied in accordance with Caltrans standard practices. Covering of small stockpiles or areas is an alternative to applying water or other dust palliatives.

No direct effects to Butte County meadowfoam are anticipated (Figure 12, *Biological Assessment, Butte 70/149/99/191 Highway Improvement Project, October 1, 2002*). Twelve Butte County meadowfoam locations are within the existing right-of-way and thus, the projects action area. Nine of these plant locations are between 28.57 and 123.05 feet from the edge of construction. The remaining three are within 14 feet of the edge of construction, with one location being within 1.34 feet of the edge of construction.

Indirect effects to Butte County meadowfoam are estimated to affect 0.53 acres. The ideal measure to offset indirect effects to Butte County meadowfoam is to preserve in perpetuity an existing population of Butte County meadowfoam. Currently, acquisition of a preserve containing Butte County meadowfoam is not feasible. Therefore, the proposed measure for indirect effects to Butte County meadowfoam will be to contribute to the Service's Vernal Pool Species Fund at a 5:1 ratio. This will yield permanent conservation of 2.65 acres.

Conservation measures for loss of vernal pool fairy shrimp and tadpole shrimp habitat due to direct and/or indirect effects will consist of both preservation and creation components. The project, as proposed, will ensure "no net loss" of habitat for all concerned vernal pool species.

The proposed measures for vernal pool tadpole shrimp and fairy shrimp include the acquisition of a preservation easement, and/or purchase of credits at an established conservation bank, for a total of 92.66 acres of compensatory vernal pool crustacean habitat. This easement/credit would provide a preservation component of 2:1 (29.33 acres direct plus 17 acres indirect at 2:1 equals 92.66 acres total).

The creation component of the vernal pool conservation measures (1:1 ratio for 29.33 acres) will be satisfied through a contribution to the Service's Vernal Pool Species Fund.

Proposed Valley Elderberry Longhorn Beetle Conservation Measures

- a. Proposed conservation measures for adverse effects to valley elderberry longhorn beetles and their habitat will follow the Service's *1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle* for establishment, restoration, and maintenance of buffer zones; transplanting of elderberry plants; planting associated native species; and monitoring the plants.

Measures for effects to the valley elderberry longhorn beetle will follow the Service's *1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle*, except as modified by this biological opinion. The actual number of shrubs that can be viably transplanted will be determined following a field review with Service biologists. Shrubs that cannot be transplanted and are destroyed will be replaced at two-times (2x) the ratios given for each stem diameter in Table 1 in the Service's *1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle*.

Measures to offset direct impacts to elderberry shrubs will be coordinated with the Sacramento River Partners and will include replacement planting and transplanting. A comprehensive mitigation plan will be presented to the Service for their approval prior to the start of any construction.

The following table details anticipated effects to elderberry shrubs and the proposed conservation measures. These values are based on ratios specified in Table 1 of the Service's *1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle* for non-riparian setting shrubs with no exit holes present and do not include replacement ratios for those plants that can not be transplanted (as discussed previously):

Number of shrubs Directly impacted	Total number of stems > 1"	Replacement @ 1:1	Total number of stems > 3"	Replacement @ 2:1	Total number of stems > 5"	Replacement @ 3:1	Total number of replacement stems needed
22	13	13	11	22	28	84	119

Habitat Conservation Plan/Natural Communities Conservation Plan

To address indirect, growth-inducing effects of the project, Caltrans and Butte County Association of Governments (BCAG) will support and facilitate efforts to establish an HCP/NCCP(s) within Butte County. The HCP/NCCP(s) will outline adequate conservation measures for potential Federal and State listed species in the area.

- a. At a minimum, the HCP/NCCP(s) will address the Federal and State listed species known at this time that may be affected by future actions that are reasonably foreseeable as a result of the current action. Additional HCP/NCCP-covered species may be added as the HCP/NCCP(s) is being developed.
- b. The HCP/NCCP(s) will be coordinated with CDFG and will include any appropriate State listed species in the HCP/NCCP(s).
- c. The HCP/NCCP(s) will address actions that are within the land use authority of

Butte County and are reasonably foreseeable as a result of the current action including land use approvals that are related to entitlements. Additional activities may be added as the HCP/NCCP(s) is developed.

- d. The HCP/NCCP(s) will cover an area (“cumulative effects boundary” as defined in Figure 16, *Biological Assessment, Butte 70/149/99/191 Highway Improvement Project, October 1, 2002*, and Figure S-3, *Draft Environmental Impact Statement/Report, California Department of Transportation, May 30, 2002*) that is reasonably foreseeable as a result of the currently proposed highway improvement project.
- e. A draft HCP/NCCP(s) will be completed by December 2003. In the event of a delay in the schedule, Butte County and Caltrans will continue to work diligently to complete the HCP/NCCP(s) in a reasonable time.

Interim Measures and Processes

The following define the interim conservation measures and processes for the time period between implementation of the SR 149 highway improvement project and the approval of the HCP/NCCP(s). These measures only apply to those areas within the “cumulative effects boundary,” within Butte County, unless otherwise noted. Implementation of these measures and processes is intended to promote conservation of Federal and State listed species, should they be impacted as a result of the proposed project, and are to remain in effect until the HCP/NCCP(s) are completed.

1. The Service, NMFS, CDFG, BCAG, Butte County, and Caltrans recognize a mutual interest in working together for the orderly urban planning and growth that is mutually beneficial to endangered species. In order to achieve this goal, the above referenced agencies will create a working group to facilitate information exchange, decision-making, and implementation of endangered species conservation measures. This will promote implementation of the interim conservation measures, and the timely completion of the HCP/NCCP(s). The working group will be made up of representatives from each of the affected agencies, and will meet regularly (generally monthly, or as necessary) during this interim period, until the HCP/NCCP(s) is completed. Through this process, Butte County and Caltrans anticipate receiving guidance from the Service, NMFS, and CDFG regarding the development and implementation of any necessary conservation measures. This group also shall be responsible for identifying the need to bring any other stakeholders who may be affected by the HCP/NCCP(s) into the process.
 - a. *Timing:* Immediate and on-going until the HCP/NCCP(s) is completed.

2. Butte County will require new project proponents, that have not started construction or other ground disturbing activities, within the “cumulative effects boundary” to provide evidence of compliance with the Act prior to approval of any action or project such as a General Plan Amendment, zone change, or related discretionary action. Such compliance will be carried out through the normal National Environmental Policy Act (NEPA) or California Environmental Quality Act (CEQA) environmental review process. However, this does not apply to ministerial actions, previously approved projects, on-going agricultural operations, or to rebuilding or minor additions and expansions on previously developed areas, pursuant to the zoning codes of Butte County. This procedural requirement will be met by the following process:
 - a. As part of the NEPA/CEQA process, Butte County will include the following language as part of the initial study or environmental impact statement/report (EIS/EIR) for a project, if either indicates that threatened or endangered species will be adversely affected by the project:

“The applicant is hereby notified of additional conditions as stipulated by the U.S. Fish and Wildlife Service (Service) and/or the California Department of Fish and Game (CDFG). Features of the applicant’s project may adversely affect Federal or State listed threatened or endangered species. In the event of a direct impact, an applicant has the option to go through one of two processes to obtain authorization to take a Federally listed species incidental to completing this project. First, when the authorization or funding of a Federal agency is an aspect of a project that may affect federally listed species, section 7 of the Endangered Species Act (Act) requires the Federal agency to formally consult with the Service. Formal consultation is concluded when the Service issues a biological opinion to the Federal agency. The biological opinion includes terms and conditions to minimize the effect of take on listed species. The Federal agency must make the terms and conditions of the biological opinion into binding conditions of its own authorization to the project applicant. An example of this process is when the U.S. Army Corps of Engineers (Corps) consults with the Service prior to issuing a permit to fill jurisdictional waters under Section 404 of the Clean Water Act (CWA). The terms and conditions of the biological opinion become binding on the project applicant through the Corps’ 404 permit authorization. Second, when no Federal funding or authorization is involved in a project, an applicant must prepare a Habitat Conservation Plan (HCP) to obtain a permit directly from the Service in accordance with section 10(a)(1)(B) of the Act. In the event incidental take is required for State listed species, one of two options are available to the applicant. The applicant may ask CDFG to prepare a consistency determination with the Incidental Take Statement in the biological opinion prepared by the Service, or they may ask CDFG to prepare a separate

Incidental Take Statement. In either case, the State requires full mitigation for impacts to State listed species. For additional information on these processes please contact the Endangered Species Division of the Service's Sacramento Fish and Wildlife Office or the appropriate Regional Office of the CDFG."

- b. If either the initial study or EIS/EIR for a project indicates that threatened or endangered species will be adversely affected by the project, Butte County will not undertake any discretionary action or project (including issuance of grading or other permits, plan amendments, zoning changes, *etc.*) without demonstration of compliance with the Act by the project proponent, as implemented through the NEPA/CEQA process. Commensurate with the normal NEPA/CEQA environmental review process, compliance may be in the form of either: (1) a letter from the Service expressing that the project is in compliance with the Act; (2) a biological opinion issued for the project (e.g., pursuant to a CWA section 404 permit); (3) a permit issued by the Service pursuant to section 10(a)1(B) of the Act, to authorize incidental take of federally listed species for the project; and/or (4) a consistency determination with the Federal Incidental Take Statement or a separate State-issued Incidental Take Statement from CDFG.
 - c. If Butte County has questions regarding the application of this measure, or when coordination with the Service is required, the Service and other corresponding regulatory agencies will provide additional guidance through the working sessions described in Item 1 above.
 - d. *Timing:* Upon completion of this biological opinion, Butte County and Caltrans will implement the actions described above in Items 1 and 2a-c.
3. In addition to the processes described above, Butte County must identify locations of federally listed species or habitat areas within the "cumulative effects boundary" and report such occurrences to the respective regulatory agencies. As part of the interim process, Caltrans will provide Butte County with a map showing any areas of potential habitat sensitivity within the "cumulative effects boundary." In the event a discretionary project application is submitted, prior to the completion of the HCP/NCCP(s), Butte County and Caltrans agree to take all steps practical to avoid impacts or degradation to species or habitats of special concern. An example of such actions by Butte County or Caltrans would be the incorporation of the Service's 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* into the NEPA/CEQA compliance documentation. This could be accomplished through referencing the above noted map and additional biological surveys for the specific project, in compliance with NEPA/CEQA. However, this does not apply to ministerial actions, previously approved projects, on-going agricultural operations, or rebuilding or minor

additions and expansions on previously developed lands.

- a. *Timing:* The map showing habitat sensitive areas shall be prepared by Caltrans on or before December 31, 2003. Additional conservation or avoidance measures shall be developed by the working group, concurrent with the submittal of any discretionary project application within the “cumulative effects boundary.”
4. Through the map of sensitive habitat areas, Butte County, Caltrans, the Service, NMFS, and CDFG will determine the need for developing any additional interim conservation measures within the “cumulative effects boundary.” Such measures shall be developed as part of the HCP/NCCP(s) process and may become necessary in the event a discretionary project or action is requested during the interim period prior to completion of the HCP/NCCP(s).
 - a. *Timing:* On-going activity to be administered through the working group.
5. Butte County, Caltrans, the Service, NMFS and CDFG agree to not expand or contract the “cumulative effects boundary,” unless by consent of all the involved agencies.
 - a. *Timing:* On-going until completion of the HCP/NCCP(s).
6. Butte County and Caltrans agree to retain the necessary technical expertise to assist with the development and/or implementation of any interim conservation measures, development of the HCP/NCCP(s), and preparation of any supporting NEPA/CEQA documentation.
 - a. *Timing:* On or before December 31, 2002, the working group shall determine the need for any additional technical support. Upon completion of the Draft HCP/NCCP(s), the working group shall determine the need and process for retaining any additional technical assistance for the preparation of a NEPA/CEQA compliance document.

This completes the description of the proposed action. Any changes to the project description, proposed conservation measures, or the proposed HCP/NCCP process and/or interim measures will require FHWA and the applicant to reinitiate consultation with the Service per 50 CFR §402.16 and the closing (reinitiation) paragraph of this biological opinion.

Status of the Species

Butte County meadowfoam

The Butte County meadowfoam was listed as endangered on June 8, 1992 (57 **FR** 24199). Critical habitat was proposed for this species on September 24, 2002 (67 **FR** 59883). A detailed account of the taxonomy, ecology, and biology of Butte County meadowfoam is presented in these documents. A recovery plan has not been completed for this species.

Butte County meadowfoam co-occurs in the same region with woolly meadowfoam (*Limnanthes floccosa* ssp. *floccosa*), white meadowfoam (*L. alba*), and pink meadowfoam (*L. douglasii* ssp. *rosea*). Before 1973, Butte County meadowfoam was not differentiated from the more widespread woolly meadowfoam. Arroyo (1973) determined that Butte County meadowfoam was a distinct taxon and gave the species its current scientific name, which has been recognized ever since. The type locality is in Butte County between Chico and Oroville, near the intersection of SR 99 and Shippee Road (Arroyo 1973). It also is referred to commonly as Shippee meadowfoam, which is derived from the type locality (California Department of Fish and Game 1987; Ornduff 1993c).

Butte County meadowfoam is a densely pubescent (hairy), winter annual herb belonging to the “false mermaid” family (*Limnanthaceae*). The stems, which range from 1 to 10 inches in length, generally lie flat on the ground with the tips curved upward, and have few leaves in the flowering stage. White flowers with dark yellow veins at the base of each of the five petals generally appear February through April. Nutlets are produced in March and April, and the plants die back by early May (Jokerst 1989; Dole and Sun 1992).

Butte County meadowfoam seeds germinate in the late fall after the rainy season begins. Seed that does not germinate in the first year following its production may still be viable. In laboratory tests on the more common woolly meadowfoam, two-thirds of the seed remained dormant even after exposure to favorable conditions, and some ungerminated seed remained in soil samples after three years (Ritland and Jain 1984). Seed dormancy may, therefore, explain population fluctuations of up to two orders of magnitude between years in Butte County meadowfoam.

Nutlets of Butte County meadowfoam are likely dispersed by water as they can remain afloat for up to three days (Hauptli *et al.* 1978). In an experiment where nine meadowfoam taxa were seeded into artificial vernal pools (Jain 1978), only four taxa colonized other parts of the pools where they had been introduced, and only two appeared in pools where they had not been seeded, even after two years. Butte County meadowfoam was not included in the study; however, it is not expected to disperse beyond its pool or swale of origin.

Butte County meadowfoam is largely self-pollinating but has floral adaptations that allow for cross-pollination by insects. Depending on the presence and size of suitable insect populations, the rate of self-pollination may vary among years or among sites (Kalin 1971 *in* Arroyo 1973;

Dole and Sun 1992). The particular pollinators of Butte County meadowfoam have not been identified. However, other meadowfoam species are pollinated by the native burrowing bees *Andrena limnanthis* and *Panurginus occidentalis* (Thorp and Leong 1998), honeybees (*Apis mellifera*) (Kesseli and Jain 1984), beetles, flies, true bugs, butterflies, and moths (Mason 1952; Thorp and Leong 1998). It is feasible then, that Butte County meadowfoam also is pollinated by the same, or similar species. The capability of a species to adapt to its environment is a function of genetic diversity, *i.e.*, the more diverse, the more adaptable. Cross-pollination promotes genetic diversity to a much greater extent than self-pollination by generating novel combinations of genetic material. Thus, insect pollinators may provide an important evolutionary benefit to Butte County meadowfoam.

Population size in Butte County meadowfoam is affected by the amount and timing of rainfall, as well as its interaction with soil and topography. Nutlet (and therefore seed) production in Butte County meadowfoam and related taxa also varies according to environmental conditions. The growing seasons of 1990 (*i.e.*, autumn 1989 to spring 1990), 1991, and 1994 were drier than average in the Chico area, whereas the 1992 and 1993 seasons were wetter than average (Kelley *et al.* 1994). Survivorship data on one population (Doe Mill) showed that 75% of seedlings survived to maturity in 1993 compared to “almost 100%” in 1994. The poorer survivorship in 1993 has been attributed to high rainfall in December 1992 and January 1993 (Kelley *et al.* 1994). An experimentally-seeded site at the Tuscan Preserve suffered 5% greater mortality in 1994 than did the Doe Mill population, primarily because the upper part of the swale at the former site received less runoff and therefore dried out before Butte County meadowfoam had set seed (Kelley *et al.* 1994).

Overall, the largest populations of Butte County meadowfoam produce the greatest number of nutlets per plant (Dole 1988; Dole and Sun 1992). However, the number of flowers per plant is reduced in dense colonies of Butte County meadowfoam because individuals produce fewer branches and therefore fewer flowers. Competition from other plant species also reduces flower production (Crompton 1993; Kelley and Associates Environmental Sciences 1993*b*). Thus, the average number of flowers per plant differs among sites and years.

Butte County meadowfoam occurs primarily in vernal swales, and to a lesser extent on the margins of vernal pools (Arroyo 1973; Dole 1988; Jokerst 1989; CNDDDB 2000). However, it does not persist in pools or swales that are inundated for prolonged periods or remain wet during the summer months, nor in drainages where water flows swiftly (Jokerst 1989; Kelley and Associates Environmental Sciences 1993*a*). It typically occurs in long, narrow bands in connected swales or on pool margins but can be found in irregular clusters in isolated drainages (Crompton 1993) and has been found occasionally in disturbed areas such as drainage ditches, firebreaks, and graded sites (McNeill and Brown 1979; Jokerst 1989; Kelley and Associates Environmental Sciences 1992*b*; Kelley and Associates Environmental Sciences 1993*a*).

Butte County meadowfoam occurs on soils of the Tuscan-Anita and the Redding-Igo complexes, specifically on the Anita and Igo soils, which are confined to the pools and swales. Tuscan and

Redding soils are restricted to the mounds. It has been observed on Anita clay soils annually regardless of rainfall but appears on Igo soils only in years of above-average rainfall (Kelley and Associates Environmental Sciences 1992a; Kelley and Associates Environmental Sciences 1992b; Crompton 1993), presumably because the former can hold approximately twice as much moisture (Kelley and Associates Environmental Sciences 1993a). Confirmed occurrences have been found at 165 to 300 feet in elevation (McNeill and Brown 1979; CNDDDB 2000).

Urban and agricultural development; resulting in altered hydrological regimes, increased grazing pressure, construction-related activities, and increased anthropocentric activities have caused the decline of Butte County meadowfoam and threatened its continued survival. Of the nine remaining populations, six are currently threatened directly or indirectly by proposed development projects (C. Sellers, City of Chico, *in litt.*, 2001). Additional changes in hydrology throughout the range of Butte County meadowfoam are possible from developments adjacent to extant populations, from further construction of roads and canals, and from grading or other surface disturbances. Moreover, subtle hydrological changes that already have taken place are likely to continue reducing seed-set in Butte County meadowfoam, leading to the eventual extirpation of some populations.

Butte County Meadowfoam Proposed Critical Habitat

The proposed rule designating critical habitat for Butte County meadowfoam establishes four critical habitat units totaling 40,326 acres based on two generalized primary constituent elements for vernal pool plants and two specific primary constituent elements for the species. Primary constituent elements include, but are not limited to, those habitat components that are essential for the primary biological needs of germination, growth, reproduction, and dispersal. The generalized primary constituent elements for the Butte County meadowfoam are (a) the necessary soil moisture and aquatic environment required for seed germination, growth and maturation, reproduction, and dispersal, and the appropriate periods of dry-down for seed dormancy and (b) to maintain both the aquatic phase and the drying phase of the vernal pool habitat. Both the wet and dry phases of the vernal pool help to reduce competition with strictly terrestrial or strictly aquatic plant species. The wet phase provides the necessary cues for germination and growth, while the drying phase allows the vernal pool plants to flower and produce seeds. Vernal pool species are ecologically dependent on seasonal fluctuations, such as absence or presence of water during specific times of the year, the duration of inundation, and the rate of drying of their habitats. Additionally, the rate of vernal pool drying, during which vernal pool plants must flower and produce seeds, is also largely controlled by interactions between the vernal pool and the surrounding uplands (Hanes *et al.* 1990; Hanes and Stromberg 1998 *in* 67 **FR** 59883).

Primary constituent elements specific to Butte County meadowfoam include: (a) vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths and the adjacent upland margins of these depressions that sustain Butte County meadowfoam germination, growth and reproduction, including but not limited to, vernal pool swales and the margins of vernal pools on the Tuscan, Redbluff, Riverbank, and Modesto geologic formations

underlain by Tuscan-Anita and Igo-Redding complex soils among others; and (b) the associated watershed(s) and hydrologic features, including the pool basin, swales, and surrounding uplands (which may vary in extent depending on pool size and depth, soil type and depth, hardpan or claypan type and extent, topography, and climate) that contribute to the filling and drying of the vernal pool or ephemeral wetland, and that maintain suitable periods of pool inundation, water quality, and soil moisture for Butte County meadowfoam germination, growth and reproduction, and dispersal, but not necessarily every year.

Conservation of Butte County Meadowfoam

The area encompassing the City of Chico, California contains the entire range of the Butte County meadowfoam. Given the uncertain status of Butte County meadowfoam and the importance of each population to the survival and recovery of this species, preservation of existing habitat with viable populations and restoration of degraded habitat/creation of habitat are essential to its conservation. Related to this is the issue of managing protected sites. Although preserving sites which support populations of Butte County meadowfoam protects these sites from future development, without adequate management, including funding, it is likely that the species will not persist in the long-term, particularly at the smaller preserves. For example, the Doe Mill Preserve population declined in recent years due to lack of adequate control of invasive grasses by grazing or burning (K. Tarp, USFWS, pers comm., March 2001), thereby resulting in reduced population size and seed set (Center for Natural Lands Management 1997).

In addition to maintaining its distribution over as much of its historic range as possible, which is needed to minimize the adverse effects of stochastic events, preservation of existing habitat containing viable populations and restoration of degraded habitat/creation of habitat is important from a genetic perspective as well. As noted earlier (Dole and Sun 1992), loss of any population could reduce the remaining overall genetic diversity of the species. Loss of a substantial portion of a population could result in additional genetic bottlenecks and further restriction of the gene pool.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

The vernal pool tadpole shrimp and vernal pool fairy shrimp were listed as endangered and threatened, respectively, on September 19, 1994 (59 **FR** 48136). Complete descriptions of these species are found in these documents and Simovich *et al.*, (1992) provide further details about the life history and ecology of these animals. Critical habitat was proposed for these species on September 24, 2002 (67 **FR** 59883). No recovery plan has been completed for these species.

These crustaceans are restricted to vernal pools and swales in California. The vernal pool tadpole shrimp has dorsal compound eyes, a large shield-like carapace that covers most of the body, and a pair of long cercopods at the end of the last abdominal segment (Linder 1952; Longhurst 1955; Pennak 1989). It is primarily a benthic animal that swims with its legs down. Tadpole shrimp climb or scramble over objects, as well as move along or in bottom sediments.

Their diet consists of organic detritus and living organisms, such as fairy shrimp and other invertebrates (Pennak 1989). The females deposit their eggs on vegetation and other objects on the pool bottom. Tadpole shrimp populations pass the dry summer months as diapaused eggs in pool sediments. Some of the eggs hatch as the vernal pools are filled with rainwater in the fall and winter of subsequent seasons.

The life history of the vernal pool tadpole shrimp is linked to the phenology of its vernal pool habitat. After winter rainwater fills the pools, the populations are reestablished from diapaused eggs which lie dormant in the dry pool sediments (Ahl 1991; Lanaway 1974). Ahl (1991) found that eggs in one pool hatched within three weeks of inundation and sexual maturation was reached in another three to four weeks. The eggs are sticky and readily adhere to plant matter and sediment particles (Simovich *et al.* 1992). A portion of the eggs hatch immediately and the rest enter diapause and remain in the soil to hatch during later rainy seasons (Ahl 1991). The vernal pool tadpole shrimp matures slowly and is a long-lived species (Ahl 1991). Adults are often present and reproductive until the pools dry up in the spring (Ahl 1991; Simovich *et al.* 1992).

The vernal pool fairy shrimp has a delicate elongate body, large stalked compound eyes, no carapace, and 11 pairs of swimming legs. It swims or glides gracefully upside down by means of complex beating movements of the legs that pass in a wave-like anterior to posterior direction. Fairy shrimp feed on algae, bacteria, protozoa, rotifers, and bits of detritus. The females carry the eggs in an oval or elongate ventral brood sac. The eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The "resting" or "summer" eggs are capable of withstanding heat, cold, and prolonged desiccation. When the pools fill in the same or subsequent seasons, some, but not all, of the eggs may hatch. The egg bank in the soil may consist of eggs from several years of breeding (Donald 1983). The eggs hatch when the vernal pools fill with rainwater. The early stages of the vernal pool fairy shrimp develop rapidly into adults. These non-dormant populations often disappear early in the season long before the vernal pools dry up.

The vernal pool fairy shrimp inhabits vernal pools with clear to tea-colored water, most commonly in grass or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands, but one population occurs in sandstone rock outcrops and another population in alkaline vernal pools. The vernal pool fairy shrimp has been collected from early December to early May. It can mature quickly, allowing populations to persist in short-lived shallow pools (Simovich *et al.* 1992).

Vernal pool shrimp are ecologically dependent on seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year, durations of inundation, and other environmental factors that include specific salinity, conductivity, dissolved solids, and pH levels. Water chemistry is one of the most important factors in determining the distribution of vernal pool shrimp (Simovich *et al.* 1992). The genetic characteristics of these species, and ecological conditions, such as watershed continuity, indicate that populations of these animals are defined

by pool complexes rather than by individual vernal pools (Fugate 1992). Therefore, the most accurate indication of the distribution and abundance of these species is the number of inhabited vernal pool complexes. Individual vernal pools occupied by these species are most appropriately referred to as subpopulations. The pools and, in some cases, pool complexes supporting these species are usually small.

The vernal pool tadpole shrimp is sparsely distributed along the Central Valley from east of Redding in Shasta County south to Fresno County, and in a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in Alameda County. It inhabits vernal pools containing clear to highly turbid water, ranging in size from 5 square meters (54 square feet) in the Mather Air Force Base area of Sacramento County, to the 36-hectare (89-acre) Olcott Lake at Jepson Prairie in Solano County.

The vernal pool fairy shrimp is currently found in 27 counties across the Central Valley and coast ranges of California and southern Oregon and occupies a variety of vernal pool habitats. Although the vernal pool fairy shrimp is distributed more widely than most other fairy shrimp species, it is generally uncommon throughout its range, and rarely abundant where it does occur (Eng *et al.* 1990). The vernal pool fairy shrimp is known from the Stillwater Plain in Shasta County through most of the length of the Central Valley to Pixley in Tulare County, and along the central coast range from northern Solano County to Pinnacles in San Benito County (Eng *et al.* 1990; Fugate 1992; Sugnet and Associates 1993). Five additional, disjunct occurrences exist: one near Soda Lake in San Luis Obispo County; one in the mountain grasslands of northern Santa Barbara County; one on the Santa Rosa Plateau in Riverside County, one near Rancho California in Riverside County, and a recently discovered population near Medford, Oregon (Brent Helm, pers. com. 1998). Three of these five isolated occurrences each contain only a single pool known to be occupied by the vernal pool fairy shrimp.

The primary historic dispersal method for the vernal pool tadpole shrimp and vernal pool fairy shrimp likely was large scale flooding resulting from winter and spring rains which allowed the animals to colonize different individual vernal pools and other vernal pool complexes (J. King, pers. comm., 1995). This dispersal currently is non-functional due to the construction of dams, levees, and other flood control measures, and widespread urbanization within significant portions of the range of this species. Waterfowl and shorebirds likely are now the primary dispersal agents for vernal pool tadpole shrimp and vernal pool fairy shrimp (Brusca *in litt.*, 1992; King *in litt.* 1992; Simovich *in litt.* 1992). The eggs of these crustaceans are either ingested and later excreted (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers where they are transported to new habitats.

The vernal pool tadpole shrimp and vernal pool fairy shrimp are imperiled by a variety of human-caused activities, primarily urban development, water supply/flood control projects, and land conversion for agricultural use. Habitat loss occurs from direct destruction and modification of pools due to filling, grading, discing, leveling, and other activities, as well as modification of surrounding uplands which alters vernal pool watersheds. Other activities which adversely affect

these species include off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use.

Holland (1978) estimated that between 67 and 88 percent of the area within the Central Valley of California which once supported vernal pools had been destroyed by 1973. However, an analysis of this report by the Service revealed apparent arithmetic errors which resulted in a determination that a historic loss between 60 and 85 percent may be more accurate. Regardless, in the ensuing years, threats to this habitat type have continued and resulted in a substantial amount of vernal pool habitat being converted for human uses in spite of Federal regulations implemented to protect wetlands. For example, the U.S. Army Corps of Engineers Sacramento District has authorized the filling of 189 hectares (467 acres) of wetlands between 1987 and 1992 pursuant to Nationwide Permit 26 (U.S. Fish and Wildlife Service 1992). The Service estimates that a majority of these wetland losses within the Central Valley involved vernal pools, the endemic habitat of the vernal pool tadpole shrimp and vernal pool fairy shrimp. Current rapid urbanization and agricultural conversion throughout the ranges of these two species continue to pose the most severe threats to the continued existence of the vernal pool tadpole shrimp and vernal pool fairy shrimp. The Corps' Sacramento District has several thousand vernal pools under its jurisdiction (Coe 1988), which includes most of the known populations of these listed species. It is estimated that within 20 years 60 to 70 percent of these pools will be destroyed by human activities (Coe 1988), *i.e.*, by the year 2008.

In addition to direct habitat loss, the vernal pool habitat for the vernal pool tadpole shrimp and vernal pool fairy shrimp also has been and continues to be highly fragmented throughout their ranges due to conversion of natural habitat for urban and agricultural uses. This fragmentation results in small isolated vernal pool tadpole shrimp and vernal pool fairy shrimp populations. Ecological theory predicts that such populations will be highly susceptible to extirpation due to chance events, inbreeding depression, or additional environmental disturbance (Gilpin and Soule 1986, Goodman 1987a,b). If an extirpation event occurs in a population that has been fragmented, the opportunities for recolonization would be greatly reduced due to physical (geographical) isolation from other (source) populations.

Vernal Pool Tadpole Shrimp Proposed Critical Habitat

The proposed rule designating critical habitat for vernal pool tadpole shrimp establishes 18 critical habitat units totaling 719,965 acres based on two generalized primary constituent elements for all four vernal pool crustaceans considered in the proposed rule, and two specific primary constituent elements for the species. Primary constituent elements provide for the physiological, behavioral, and ecological requirements of the vernal pool crustaceans. The generalized primary constituent elements for the vernal pool crustaceans are (a) provides the aquatic environment required for cyst incubation and hatching, growth and maturation, reproduction, feeding, sheltering, and dispersal, and the appropriate periods of dessication for cyst dormancy and to eliminate predators such as bullfrogs, fish, and other aquatic predators that depend on year round inundation of wetland habitats to survive; and (b) to maintain the aquatic

phase of the vernal pool habitat. The entire vernal pool complex, including the pools, swales, and associated uplands, is essential to support the aquatic functions of the vernal pool habitat.

Although the uplands are not actually occupied by vernal pool crustaceans, they nevertheless are essential to the conservation of vernal pool habitat and crustaceans because they maintain the aquatic phase of vernal pools and swales. Associated uplands are also essential to provide nutrients that form the basis of the vernal pool food chain, including a primary food source for the vernal pool crustaceans.

The primary constituent elements specific to the vernal pool tadpole shrimp include: (a) vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths that typically become inundated during winter rains and hold water for sufficient lengths of time necessary for vernal pool tadpole shrimp incubation, reproduction, dispersal, feeding, and sheltering, but which are dry during the summer and do not necessarily fill with water every year; including but not limited to vernal pools on Redding and Corning soils on high terrace landforms, and (b) the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands that together form hydrologically and ecologically functional units called vernal pool complexes. These features contribute to the filling and drying of the vernal pool, and maintain suitable periods of pool inundation, water quality, and soil moisture for vernal pool crustacean hatching, growth and reproduction, and dispersal, but not necessarily every year.

Vernal Pool Fairy Shrimp Proposed Critical Habitat

The proposed rule designating critical habitat for vernal pool fairy shrimp establishes 35 critical habitat units totaling 1,130,605 acres based on the same two generalized primary constituent elements as for the vernal pool tadpole shrimp, and two additional species-specific primary constituent elements that mirror the vernal pool tadpole shrimp primary constituent elements, with the exception to the geological formations on which the pools are formed. The primary constituent elements specific to the vernal pool fairy shrimp include: (a) vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths that typically become inundated during winter rains and hold water for sufficient lengths of time necessary for vernal pool fairy shrimp incubation, reproduction, dispersal, feeding, and sheltering, including but not limited to Northern Hardpan, Northern Claypan, Northern Volcanic Mud Flow, and Northern Basalt Flow vernal pools formed on a variety of geologic formations and soil types, but which are dry during the summer and do not necessarily fill with water every year; and (b) the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands that together form hydrologically and ecologically functional units called vernal pool complexes. These features contribute to the filling and drying of the vernal pool, and maintain suitable periods of pool inundation, water quality, and soil moisture for vernal pool crustacean hatching, growth and reproduction, and dispersal, but not necessarily every year.

Valley elderberry longhorn beetle

The valley elderberry longhorn beetle was listed as a federally threatened species on August 8, 1980 (45 **FR** 52803). A detailed account of the taxonomy, ecology, and biology of the species is presented in *The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle* (Barr 1991) and in the *1984 Valley Elderberry Longhorn Beetle Recovery Plan* (U.S. Fish and Wildlife Service 1984). Two areas along the American River in the Sacramento metropolitan area were designated as critical habitat for the valley elderberry longhorn beetle concurrently with its Federal listing (45 **FR** 52803). In addition, the *1984 Valley Elderberry Longhorn Beetle Recovery Plan* identifies two areas, one along Putah Creek, Solano County, and another area west of Nimbus Dam along the American River Parkway, Sacramento County, that are considered essential habitat for the valley elderberry longhorn beetle. These areas support large numbers of mature elderberry plants with extensive evidence of use by the valley elderberry longhorn beetle.

The valley elderberry longhorn beetle was first described in 1921 from specimens collected near Sacramento, California. It was later determined to be endemic to moist valley oak woodlands along the margins of rivers and streams in the lower Sacramento and lower San Joaquin Valleys of California. The beetle is dependent on its host plant, the elderberry, which is a locally common component of the remaining riparian forests and savannah areas and, to a lesser extent, the mixed chaparral-foothill woodlands of the Central Valley.

Adults are generally present on elderberry shrubs from March through June. During this period, the adults mate, and the females lay eggs on living elderberry plants. The female generally lays eggs either singularly, or in small groups, in crevices in the bark or at the junctures of stems and leaves along the trunk of the plant. Presumably, eggs hatch shortly after they are laid and the larvae bore into the pith of larger stems and roots where they remain until they mature. Just prior to the pupal stage, larvae open an emergence hole in the bark and then return to the pith to pupate. Use of the elderberry shrubs by the valley elderberry longhorn beetle is rarely apparent as the only exterior evidence of the shrub's use by the beetle is the "exit hole" created by the larvae just prior to the pupal stage. Larvae appear to be distributed primarily in elderberry stems that are one inch in diameter or greater at ground level.

Habitat destruction was the primary factor contributing to the need to federally list the valley elderberry longhorn beetle. Riparian forests, the primary habitat for the beetle, have been severely depleted throughout the Central Valley over the last two centuries (Katibah 1984; Thompson 1961; Roberts *et al.* 1977). The *1984 Valley Elderberry Longhorn Beetle Recovery Plan* attributed the loss and alteration of this riparian habitat to agricultural conversion, grazing, levee construction, stream and river channelization, removal of riparian vegetation, riprapping of shoreline, recreation, and industrial and urban development.

The valley elderberry longhorn beetle probably occurs naturally at low densities and probably has a limited dispersal capability (Barr 1991; Collinge *et al.* 2001; Huxel 2000). This makes the

beetle extremely vulnerable to the negative effects associated with habitat loss and fragmentation. Small, isolated subpopulations are susceptible to extirpation from random demographic, environmental, and/or genetic events (Shaffer 1981; Lande 1988; Primack 1998). A large area of habitat may support a single large population, whereas smaller subpopulations result from habitat fragmentation and isolation. These subpopulations may tend to lose genetic variability through genetic drift. This generally leads to inbreeding depression and a lack of adaptive flexibility. Ultimately, these smaller populations are more vulnerable to random fluctuations in reproductive and mortality rates, and are more likely to be extirpated by random environmental factors. Barr (1991) found that small, isolated habitat remnants were less likely to be occupied by beetles than larger patches, indicating that beetle subpopulations are extirpated from small habitat fragments, or may be unable to re-colonize isolated patches of habitat. Barr (1991) and Collinge *et al.* (2001) consistently found beetle exit holes occurring in clumps of elderberry bushes rather than isolated bushes, suggesting that isolated shrubs do not typically provide long-term viable habitat for this species. Huxel (2000), used computer simulations of colonization and extinction patterns for the beetle, based on differing dispersal distances, and found that short dispersal simulations best matched census data in terms of site occupancy. This suggests that in the natural system dispersal, and thus colonization, is limited to nearby sites.

Habitat fragmentation not only isolates small populations, but also increases the interface between habitat and urban or agricultural land, thereby increasing negative edge effects such as the invasion of non-native species (Huxel 2000; Soule 1990) and pesticide contamination (Barr 1991). Recent evidence indicates that the invasive Argentine ant (*Linepithema humile*) poses a risk to the long-term survival of the valley elderberry longhorn beetle. Surveys along Putah Creek found beetle presence where Argentine ants were not present or had recently colonized, and beetle absence from otherwise suitable sites where Argentine ants had become established (Huxel 2000). The Argentine ant has been expanding its range throughout California since its introduction around 1907, especially in riparian woodlands associated with perennial streams (Holway 1998; Ward 1987). Huxel (2000) states that, given the potential for Argentine ants to spread with the aid of human activities such as movement of plant nursery stock and agricultural products, this species may come to infest most drainages in the Central Valley along the valley floor, where the beetle is found.

Direct spraying and pesticide drift in or near riparian areas is likely to adversely affect the valley elderberry longhorn beetle and its habitat. Pesticides have been identified as one of a number of potential causes of pollinator species' declines, and declines of other insects beneficial to agriculture (Ingraham *et al.* 1996). Although there have been no studies specifically focusing on the effects of pesticides on the beetle, it is likely that the beetle, typically occurring adjacent to agricultural lands, may have suffered pesticide-induced declines as well.

Grazing by livestock damages or destroys elderberry plants and inhibit regeneration of seedlings. Cattle readily forage on new growth of elderberry, which may explain the absence of valley elderberry longhorn beetles at manicured elderberry stands (U.S. Fish and Wildlife Service 1984). Habitat fragmentation exacerbates problems related to exotic species invasion and cattle

grazing by increasing the edge:interior ratio of habitat patches, facilitating the penetration of these influences.

Environmental Baseline

Butte County Meadowfoam

Butte County meadowfoam has been found only in Butte County, California. All 13 of the occurrences recognized by the CNDDDB (2002) had been reported by 1992. Five are in northern and northeastern Chico near the municipal airport, four (including the type locality) are from the area around Shippee (northwest of Oroville), and three are from southeastern Chico. The other occurrence, northeast of the town of Nord, contained only one plant. However, the area indicated would be in the same vicinity as a 1917 collection.

Two occurrences of Butte County meadowfoam have been extirpated, one each in northern and southeastern Chico (Jokerst 1989, Dole and Sun 1992, U.S. Fish and Wildlife Service 1992, CNDDDB 2001). One population, which consisted of 10 plants in 1980, has not been seen in the ensuing years. The other nine occurrences are presumed to be extant (CNDDDB 2002), although some have been reduced in extent. Not counting the Nord area, which has not been studied, the extant occurrences represent four races (Jokerst 1989, Dole and Sun 1992). These occur in four natural centers of concentration: northern, northeastern, and southeastern Chico, and the area near Shippee.

In 1991, Caltrans reported locating approximately 40 pools and swales harboring Butte County meadowfoam within one section (1 square mile) along State Route 149 (U. S. Fish and Wildlife Service 1992). One site was located between Cottonwood Creek and Gold Run, and two locations were between Gold Run and Dry Creek. The SR 149 population was ranked third in size, with 17,575 individuals in 1992 (Caltrans 2002). In 1999, Caltrans biologists identified Butte County meadowfoam in 67 sites/subpopulations adjacent to Gold Run Creek, on the north and south side of SR 149. Thirty-six sites were north of Openshaw Road (representing 65% of the 17,575 plants), 12 sites were between Openshaw Road and SR 149, and 19 sites were south of SR 149. Of the total number of sites recorded, 13 are located within the action area. Twelve of these subpopulations are in vernal pools and one is in a drainage ditch. The specific numbers of plants in each of the 12 locations is unknown, however, approximately 4000 plants (23%) comprising the second largest concentration of Butte County meadowfoam, are located within the drainage ditch.

Urban and agricultural development in the greater Chico area is responsible for the destruction of two occurrences of Butte County meadowfoam (U.S. Fish and Wildlife Service 1992; CNDDDB 2001). All of the Chico-area populations have been impacted by development projects or fragmented by the construction of roads or canals; several of the now-separate occurrences were likely contiguous in the past. The roads and canals also altered the drainage patterns at many sites, reducing their suitability for Butte County meadowfoam by creating conditions too dry or

too wet for its survival (Dole 1988; Jokerst 1989; Kelley and Associates Environmental Sciences 1992b). Although some plants were observed at the type locality as of 1989, the site had been severely degraded by grading, agricultural use, and off-road vehicles and this population is now considered extirpated (Jokerst 1989; Dole and Sun 1992; CNDDDB 2001). Several populations have been reduced in size by surface disturbances such as grading and removal of topsoil (Jokerst 1989; U.S. Fish and Wildlife Service 1992).

Butte County Meadowfoam Proposed Critical Habitat

Approximately two-thirds of the project is occurring within Unit 4 (Oroville Unit, Butte County) of the proposed designated critical habitat for Butte County meadowfoam. This unit encompasses 12,382 acres and was proposed as critical for Butte County meadowfoam because it contains vernal pools and swales on the Tuscan, Red Bluff and Riverbank geologic formations where the species is found (Holland 1998; Liss 2001; CNDDDB 2001). This unit represents one of only four units for Butte County meadowfoam across its entire range and it contains individuals from the southern race of Butte County meadowfoam, so it is an important component of the species genetic diversity.

The lands included within this unit are privately owned. Urban development, highway expansion and construction, agricultural conversion, and hydrologic disruptions or modifications have greatly impacted vernal pool habitats and restricted Butte County meadowfoam's distribution throughout this unit. The distribution of the species and vernal pool habitats within the Chico area have become highly fragmented and isolated from each other.

Vernal Pool Tadpole Shrimp and Fairy Shrimp

The vernal pool tadpole shrimp is known from 19 populations in the Central Valley, ranging from east of Redding in Shasta County south to Fresno County, and from a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in Alameda County. The vernal pool fairy shrimp is known from 32 populations extending from Stillwater Plain in Shasta County through most of the length of the Central Valley to Pixley in Tulare County, and along the central coast range from northern Solano County to Pinnacles in San Benito County (Eng *et al.* 1990; Fugate 1992; Sugnet and Associates 1993) and a disjunct population on the Agate Desert in Oregon. Five additional, disjunct populations exist: one near Soda Lake in San Luis Obispo County; one in the mountain grasslands of northern Santa Barbara County; one on the Santa Rosa Plateau in Riverside County, one near Rancho California in Riverside County and one on the Agate Desert near Medford, Oregon. Three of these isolated populations each contain only a single pool known to be occupied by the vernal pool fairy shrimp.

Vernal pool tadpole shrimp were recorded in the Pentz Pool in 1973 (CNDDDB 1999) and in the immediate SR 149 project area in 1993 (BioSystems 1993). In the 1993 surveys, BioSystems identified this species in pools at both the west end and the east end of SR 149. The species was

identified in six of the 89 ponded habitats surveyed (BioSystems 1993). Caltrans biologists verified these occurrences in 1997. Since the initial surveys identified this species throughout the vernal pool/swale complexes of the project area, Caltrans decided to assume the presence of vernal pool tadpole shrimp in the vernal pools and swales that will be affected by the project.

BioSystems (1993) also documented the presence of vernal pool fairy shrimp in the action area. This species was recorded in 26 of the 89 ponded water areas identified as appropriate habitat. These occurrences were verified in 1997 by Caltrans biologists, but no protocol surveys were initiated. Because the initial surveys identified this species in the vernal pool/swale complexes throughout the project area, Caltrans also decided to assume the presence of vernal pool fairy shrimp in the vernal pools and swales that will be affected by the project.

Vernal Pool Tadpole Shrimp Proposed Critical Habitat

The proposed action is occurring completely within Unit 4 (Oroville Unit, Butte and Yuba Counties) of the proposed designated critical habitat for the vernal pool tadpole shrimp. This unit encompasses 39,474 acres and is proposed as critical habitat for vernal pool tadpole shrimp because it contains occurrences of the species and vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths necessary for vernal pool tadpole shrimp to complete their life cycle (Holland 1998, CNDDDB 2001). This unit contains some of the few areas where vernal pool tadpole shrimp are found in Northern Volcanic Mudflow vernal pools, including vernal pools found on the Tuscan and Lovejoy Basalt geologic formations. Vernal pool tadpole shrimp also occur within Northern Hardpan vernal pools in this unit, including pools formed on the Riverbank and Modesto geologic formations.

The majority of the lands included within this unit are privately owned. Ownership and protected lands within the unit includes the Bureau of Land Management (119 acres), the U.S. Forest Service (194 acres), the natural resource Conservation Service's Wetland Reserve Program easements (35 acres), and CDFG administered lands (173 acres). The amount of vernal pool habitat currently protected within the unit is very small and the pools within this unit are highly threatened due to their location on the lower elevation slopes adjacent to agricultural and urban development. Urban expansion, particularly in the vicinity of Chico, is the greatest threat to existing vernal pool habitats throughout this unit.

Vernal Pool Fairy Shrimp Proposed Critical Habitat

The project, as proposed is not occurring within proposed critical habitat for the vernal pool fairy shrimp. However, the resulting growth-inducing effects of this action may adversely affect one or more critical habitat units for the vernal pool fairy shrimp. Therefore, it is included in this biological opinion.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle's current distribution is patchy throughout the remaining habitat of the Central Valley from Redding to Bakersfield. Surveys conducted in 1991 (Barr 1991) found evidence of beetle activity at 28 percent of 230 sites with elderberry shrubs. The 1991 report lists 15 survey locations within Butte County, of which 8 sites had evidence of previous or current valley elderberry longhorn beetle populations (Big Chico Creek, lower Bidwell Park in Chico; and Oroville Wildlife Area, southwest of Oroville). In April 1993, BioSystems documented 47 elderberry shrubs in five discrete areas near the immediate SR 149 project area. The count of stems greater than one-inch in diameter for these 47 shrubs was 90. One shrub, growing in the Great Valley willow scrub habitat along a ditch near the southeast end of SR 149, had a single exit hole.

The latest survey, using current project design plans, show a total of 22 elderberry shrubs (52 stems) located within 100 feet of the edge of construction. All 22 shrubs will be directly affected and removed due to the project.

Effects of the Proposed Action*Butte County meadowfoam*

Construction will avoid all direct effects to Butte County meadowfoam. No individual plants, populations, or sub-populations will be destroyed or removed through construction activities. However, the edge of construction will come within 1.34 feet of an existing location of Butte County meadowfoam. Therefore, since there are Butte County meadowfoam pools/swales in the proposed right of way and near planned construction activity, the Service expects there will be indirect effects. This is estimated to be 0.53 acres.

Indirect effects include alteration to surface and subsurface water flow and alteration of inundation patterns; increases in contaminants from roadway surfaces and the use of pesticide and/or mechanical means to control vegetation along right of ways; increases in erosion and sedimentation, potential effects to plant pollinators, the introduction of exotic vegetation, and changes in land use patterns (*i.e.*, urbanization) as a result of the expansion and reconstruction of roadways. All of these effects have the potential to disturb the reproductive abilities of individual plants and populations by decreasing seed and nutlet production thereby resulting in decreased numbers and/or distribution of plants in subsequent generations.

In addition to the effects associated with leveling land for construction purposes (*i.e.*, filling low lying areas), infrastructure development can have indirect effects on the hydrology of vernal pool habitats and the surrounding upland areas. Projects involving, or facilitating, the coverage of land surfaces with concrete and asphalt, the installation of drainage systems, watering systems, *etc.*, can affect the amount and quality of water available to the perched water tables characteristic of vernal pool areas. Changes to the perched water table can lead to alterations in

the rate, extent, and duration of inundation (water regime) of the remaining habitat. Grading for roads may affect the water regime of vernal pool habitat, particularly when grading involves cutting into the substrata in or near these areas. Exposure of sub-surface layers of soil at road cuts may hasten the loss of water from adjacent habitat by mass flow through networks of cracks, lenses of coarser material, animal burrows, old root channels, or other macroscopic channels. Any decrease in the duration of inundation of vernal pool habitat can affect the reproductive success of species present, including the Butte County meadowfoam, especially considering it exists at the “waterline” within swales, and at times, pools. Erosion and sedimentation associated with road building can alter vernal pool habitat through the transport and deposition of sediments into these areas, thereby altering the depth, temperature, and water quality of a pool or complex.

Roads in or near the watersheds of vernal pool habitat can lead to additional effects through the introduction of chemically laden runoff (i.e., petroleum products) from the road surfaces. The urban runoff from chemical contamination can kill listed species by poisoning or decreasing their reproductive abilities. Road maintenance activities may include the introduction of pesticides into the environment and/or activities such as routine mowing, discing, and/or grading of shoulders and ditches. Pesticides such as herbicides are specifically designed to control vegetation and are generally not target specific, although some are specific to certain types of plants such as broadleaf plants or grasses. Therefore, any spraying of pesticides to control invasive, non-native vegetation may affect Butte County meadowfoam through direct contact and/or indirect spray drift, run-off, sub-surface transport, *etc.*

There is an increased risk of introducing weedy, non-native plants into the vernal pools and swales both during and after construction due to soil disturbance from clearing and grubbing operations and, in general, the vegetation disturbance associated with the use of heavy equipment. Many non-native plants can out-compete native vegetation, thereby reducing the reproductive success of the natives. In extreme cases, entire areas can be permanently devoid of native vegetation as a result of non-native introductions.

In addition to the effects detailed above, the proposed highway improvement project will likely contribute to a local and range-wide trend of urbanization and habitat loss, degradation, and fragmentation, the principal reasons that vernal pool species have declined. The indirect effects of increased urbanization include increased traffic with a resulting increase in roadway surface pollutants and air pollutants, and increased housing development and the associated anthropocentric activities (*e.g.*, recreation). These effects on vernal pool species are not quantifiable and are dependent on the strategies employed by local and regional planning agencies to minimize effects to the environment. Therefore, the effects, as described above, will be minimized and mitigated through implementation of reasonable and prudent measures in the Incidental Take Statement below and through the development of the HCP/NCCP(s).

Butte County Meadowfoam Proposed Critical Habitat

Based on the primary constituent elements previously described, any form of construction, associated with the proposed project, that occurs in or near vernal pool habitat has the potential to affect Butte County meadowfoam proposed critical habitat through direct and indirect effects. These effects include, but are not limited to, altered hydrologic regimes that affect the surrounding upland areas, vernal pools, or swale complexes such that they fail to function properly from altered influxes of water, changes in inundation periods and depths, altered dry-down periods and durations, water temperature changes, increased sedimentation and erosion, construction-related contaminants, increases in contaminated surface run-off (*e.g.*, increased motor vehicle traffic causing an increase in oils, anti-freeze, *etc.*), and increases in anthropocentric activities within vernal pool habitat (*e.g.*, housing developments, recreational uses, *etc.*).

The project, as proposed, will have no direct effect on proposed Butte County meadowfoam critical habitat. However, the anticipated growth-inducing effects (*i.e.*, urbanization) of this action may adversely affect the proposed critical habitat in the reasonable foreseeable future. These effects include altered hydrologic regimes that affect the surrounding upland areas, vernal pools, and swale complexes such that they fail to function properly from altered influxes of water; changes in inundation periods and depths; altered water quality or temperature; changes in soil moisture content; and increases in anthropocentric activities within vernal pool habitat (*e.g.*, housing developments, recreational uses, *etc.*). As discussed previously, Butte County has agreed to continue working on an HCP/NCCP with the Service and CDFG to address the growth-inducing effects of this action.

Vernal Pool Tadpole Shrimp and Fairy Shrimp

The Service considers that an entire vernal pool is directly affected if any part of the vernal pool is destroyed. Filling of a portion of a pool will decrease the size of the pool resulting in a change in the period of inundation and in the capacity of the pool to buffer potential changes in water temperature caused by solar radiation. The biota of vernal pools and swales can change when the hydrologic regime is altered and small changes can have deleterious effect on entire populations of vernal pool crustaceans (Bauder 1986, 1987). Survival of aquatic organisms like vernal pool fairy shrimp is directly linked to the water regime of their habitat (Zedler 1987). Therefore, construction near vernal pool areas will, at times, result in the decline of local sub-populations of vernal pool organisms, including vernal pool fairy shrimp and tadpole shrimp and/or their cysts.

Indirect effects are caused by, or result from, the proposed action, are later in time, and are reasonably certain to occur. Habitat indirectly affected includes all habitat supported by destroyed upland areas and swales, and all habitat otherwise damaged by loss of watershed, human intrusion, introduced species, and pollution caused by the project. The Service considers all vernal pools not considered to be directly affected, but within 250 feet of the proposed project to be indirectly affected by project implementation.

Individual listed crustaceans and their cysts may be directly injured or killed by activities that damage the vernal pools in which they exist. The proposed project would: (1) directly affect 29.33 acres and indirectly affect 17.0 acres of vernal pool habitat for the listed vernal pool crustaceans for a total of 46.33 acres; (2) contribute to the fragmentation of the remaining listed crustacean habitat located in Butte County; and (3) increase construction-related and recreational disturbance to the vernal pool tadpole shrimp and vernal pool fairy shrimp.

Similar to Butte County meadowfoam, alterations to surface and subsurface water flow and alteration of inundation patterns; increases in contaminants from roadway surfaces and the use of pesticide and/or mechanical means to control vegetation along right of ways; increases in erosion and sedimentation, potential effects to plant pollinators, changes in land use patterns (*i.e.*, urbanization) as a result of the expansion and reconstruction of roadways all have the potential to affect vernal pool crustaceans.

The ground disturbing activities associated with the proposed project are expected to result in increases in erosion and sedimentation. Sedimentation in pools supporting listed crustaceans may result in decreased cyst viability, decreased hatching success, and decreased survivorship among early life history stages, thereby reducing the number of mature adults in future wet seasons.

Infrastructure development frequently results in human intrusion into surrounding areas. Human intrusion is a mechanism by which trash or hazardous waste can be introduced into remaining habitat areas (Bauder 1986, 1987). Disposal of waste materials can eliminate habitat, disrupt pool hydrology, or release substances into pools that are toxic or that adversely affect water chemistry. Off-road vehicle use and other recreational activities associated with humans can lead to wheel ruts, soil compaction, increased siltation, destruction of native vegetation, and an alteration of pool hydrology.

The introduction and increase of chemically laden runoff and/or pesticide use from the road surfaces and right of ways can have adverse effects on all listed vernal pool crustaceans and/or their cysts. Individuals may be killed directly or suffer reduced fitness through physiological stress or a reduction in their food base due to the presence of these chemicals.

Additionally, as detailed for the Butte County meadowfoam, the proposed highway improvement project will contribute to a local and range-wide trend of urbanization and habitat loss, degradation, and fragmentation at an unquantifiable level. These effects will be minimized and mitigated through implementation of reasonable and prudent measures in the Incidental Take Statement below and through the development of the HCP.

Vernal Pool Tadpole Shrimp and Fairy Shrimp Proposed Critical Habitat

Based on the primary constituent elements previously described for the vernal pool tadpole shrimp, any form of construction, associated with the proposed project, that occurs in or near

vernal pool habitat has the potential to disrupt vernal pool crustacean critical habitat through direct and indirect effects. These effects include altered hydrologic regimes that affect the surrounding upland areas, vernal pools, and swale complexes such that they fail to function properly from altered influxes of water; changes in inundation periods and depths; altered water quality or temperature; changes in soil moisture content; and increases in anthropocentric activities within vernal pool habitat (*e.g.*, housing developments, recreational uses, *etc.*).

The project, as proposed, will have no direct effect on the proposed vernal pool fairy shrimp critical habitat. However, the anticipated growth-inducing effects (*i.e.*, urbanization) of this action may adversely affect the designated critical habitat in the reasonable foreseeable future. These effects are the same type of effects as those stated above for vernal pool tadpole shrimp, including direct killing of individuals or populations, altered hydrologic regimes, altered water and soil qualities, and increases in anthropocentric activities. As discussed previously, Butte County has agreed to continue working on an HCP/NCCP with the Service and CDFG to address the growth-inducing effects of this action.

Valley Elderberry Longhorn Beetle

This action will adversely affect the valley elderberry longhorn beetle. A total of 22 elderberry shrubs with a total of 52 stems greater than one inch in diameter at ground level will be directly affected by the proposed project. Although no stems contained old beetle emergence holes, any beetle larvae potentially occupying these plants are likely to be killed when the plants are removed.

To minimize the effects to the species FHWA (*i.e.*, Caltrans) will relocate (transplant) all viable elderberry shrubs that have one or more stems measuring 1.0 inch or greater in diameter at ground level and will plant additional elderberry, in the form of seedlings or cuttings, and associated native species in accordance with Service's 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*. According to the guidelines, complete avoidance (*i.e.*, no adverse effect) is assumed when shrubs are located beyond 100 feet of the project boundary.

Transplantation of elderberry shrubs that are or could be used by beetle larvae is expected to adversely affect the beetle. Beetle larvae may be killed or the beetles' life cycle interrupted during or after the transplanting process. For example: (a) transplanted elderberry shrubs may experience stress or become unhealthy due to changes in soil, hydrology, microclimate, or associated vegetation. This may reduce their quality as habitat for the beetle, or impair their production of habitat-quality stems in the future; (b) elderberry shrubs may die as a result of transplantation; and/or (c) branches containing larvae may be cut, broken, or crushed as a result of the transplantation process.

Temporal loss of habitat will occur. Although conservation measures for effects on the valley elderberry longhorn beetle involve creation or restoration of habitat, it generally takes five or more years for elderberry plants to become large enough to support beetles, and it may take 25

years or longer for riparian habitats to reach their full value. Temporal loss of habitat will temporarily reduce the amount of habitat available to beetles and may cause fragmentation of habitat and isolation of subpopulations.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Because Butte County meadowfoam, vernal pool tadpole shrimp, and vernal pool fairy shrimp are endemic to vernal pools in the Central Valley, coast ranges, and a limited number of sites in the transverse range and Santa Rosa Plateau of California, the Service anticipates that a wide range of activities will affect these species. Such activities include, but are not limited to urban, water, flood control, highway and utility projects, chemical contaminants, as well as conversion of vernal pools to agriculture use. Many of these activities will be reviewed under section 7 of the Act as a result of the Federal nexus provided by section 404 of the Clean Water Act. However, an undetermined number of future unauthorized projects that alter the habitat of the Butte County meadowfoam, vernal pool tadpole shrimp, and the vernal pool fairy shrimp, likely will be permitted and, as such, are cumulative to the proposed project.

Continued human population growth in the Central Valley and other parts of California is expected to drive further development of agriculture, cities, industry, transportation, and water resources in the foreseeable future. Some of these future activities will not be subject to Federal jurisdiction (and thus are considered to enter into cumulative effects), and are likely to result in the loss of riparian and other habitats where elderberry plants and the valley elderberry longhorn beetle exist.

Commitments have been made by Butte County to prepare an HCP/NCCP(s) to address indirect effects of the proposed highway improvement project. While project proponents and local land use jurisdictions have discussed preparation of HCPs to support application for incidental take permits, no HCPs have been finalized or incidental take permits issued for these developments. If the project proponents continue to pursue development of HCPs and applications for incidental take permits, the effects of the planned developments will be addressed through future consultations pursuant to section 7 of the Act. However, the HCP process is voluntary and preparation of an HCP or issuance of an incidental take permit is not guaranteed. The decision to obtain incidental take permits lies ultimately with the prospective permit applicants. Some portions of the proposed developments are not otherwise subject to Federal permitting processes and may not be subject to section 7 consultation through other means. If development proceeds within portions of the proposed development areas, take of federally listed species may or may not result, depending on site specific conditions. Regardless of whether direct take will result from limited development within these proposed areas, indirect effects to federally listed species

are expected to result from all portions of the proposed developments.

In the interim, applicants have to demonstrate compliance with the Act before local permits are issued. A process will be put in place to help minimize the indirect effects. These other projects are anticipated to occur later in time, and the effects will not happen all at once.

Conclusion

After reviewing the current status of the Butte County meadowfoam, the vernal pool tadpole shrimp, vernal pool fairy shrimp, the valley longhorn elderberry beetle, the environmental baseline for the action area, the effects of the proposed project, and its cumulative effects; it is the Service's biological opinion that the SR 149 project, as proposed, is not likely to jeopardize the continued existence of the Butte County meadowfoam, vernal pool fairy shrimp, vernal pool tadpole shrimp, or valley elderberry longhorn beetle. No destruction or adverse modification of the valley elderberry longhorn beetle critical habitat is anticipated as none is located within the action area. Proposed critical habitat for Butte County meadowfoam, vernal pool tadpole shrimp, and the vernal pool fairy shrimp will not be adversely modified or destroyed.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the FHWA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Valley Elderberry Longhorn Beetle

The Service expects that incidental take of vernal pool fairy shrimp, vernal pool tadpole shrimp, and valley elderberry longhorn beetle may occur during this action. The extent of the take will be difficult to detect or quantify because of the ecology and biology of these species. Additionally, their size and cryptic nature makes the finding of a dead specimen unlikely. Seasonal population fluctuations also may mask the ability to determine the exact extent of take.

Due to the difficulty in quantifying the number of vernal pool crustaceans and valley elderberry longhorn beetles that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of vernal pools/ponded depressions (vernal pool crustacean habitat) and the number of elderberry stems one inch or greater in diameter at ground level (beetle habitat) that will become unsuitable for vernal pool crustaceans and beetles due to direct or indirect effects as a result of the action. Therefore, the Service estimates that all vernal pool fairy shrimp and vernal pool tadpole shrimp inhabiting 46.33 acres of vernal pool habitat (29.33 acres direct plus 17 acres indirect) and all valley elderberry longhorn beetles inhabiting 22 elderberry plants containing 52 stems one inch or greater at ground level will be harmed, harassed, injured, or killed, as a result of the proposed action.

Upon implementation of the following reasonable and prudent measures, incidental take associated with the SR 149 highway improvement project on the listed vernal pool crustaceans and the valley elderberry longhorn beetle, in the form of harm, harassment, injury, or mortality from habitat loss or degradation will become exempt from the prohibitions described under section 9 of the Act for direct effects. In addition, incidental take in the form of harm, harassment, or mortality associated with the proposed project will be exempt from the prohibitions described under section 9 of the Act for indirect effects, except for indirect effects of interrelated and interdependent actions such as urbanization, agricultural conversion of land, *etc.* as described in this biological opinion. Each of those interrelated and interdependent projects must receive its own incidental take authorization.

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to Butte County meadowfoam, vernal pool fairy shrimp, vernal pool tadpole shrimp, or valley

elderberry longhorn beetle, result in destruction or adverse modification of critical habitat for the beetle, or adverse modification or destruction of proposed critical habitat for Butte County meadowfoam, vernal pool tadpole shrimp, or the vernal pool fairy shrimp.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize incidental take of listed vernal pool crustaceans and the valley elderberry longhorn beetle:

Valley elderberry longhorn beetle and vernal pool crustaceans:

1. Take in the form of harm, harassment, and mortality of valley elderberry longhorn beetle and/or vernal pool crustaceans during construction activities and/or activities associated with implementing the project shall be minimized.
2. The effects to valley elderberry longhorn beetle and/or vernal pool crustaceans resulting from habitat modification and temporary and/or permanent losses and degradation of habitat shall be minimized and, to the greatest extent practicable, habitat shall be restored to its pre-project condition.
3. Temporal and permanent loss of valley elderberry longhorn beetle and/or vernal pool crustacean habitat shall be compensated.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the FWA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. The terms and conditions are non-discretionary.

Valley elderberry longhorn beetle and vernal pool crustaceans:

1. The following terms and conditions implement reasonable and prudent measure one (1):
 - a. Implement the proposed conservation measures for the valley elderberry longhorn beetle, the vernal pool fairy shrimp, and the vernal pool tadpole shrimp, as described in the project description of this biological opinion and any associated environmental documents applicable to this project such as the BA and Environmental Impact Statement/Report. The only exceptions are as modified in these Terms and Conditions.
 - b. No earlier than two weeks prior to ground disturbance, site preparation, or other construction activities, a Service-approved biologist will conduct a pre-

construction survey to determine the presence of the vernal pool tadpole shrimp, vernal pool fairy shrimp, and the valley elderberry longhorn beetle within the action area. Should any of these species be located, its disposition and anticipated fate during construction will be determined. If it is determined that the species will be subject to take in the form of harm, injury, or death, the individual(s) will be relocated, if possible, by the Service approved biologist to an appropriate relocation site. The Service shall be contacted in writing within three (3) working days of the incidence.

- c. No earlier than one week prior to ground disturbance, site preparation, or other construction activities, a Service-approved biologist will conduct a training session for all construction personnel. All individuals that will be involved in the site preparation or construction must be present, including the representative responsible for reporting take to the Service and CDFG. Training sessions will be repeated for all new employees before they access the project site. Sign up sheets identifying attendees and the contractor/company they represent will be provided to the Service within one week of such training. At a minimum, the training will include a description of the natural history of the valley elderberry longhorn beetle, vernal pool tadpole shrimp, vernal pool fairy shrimp, Butte County meadowfoam, and their habitats; the general measures that are being implemented to conserve these species as they relate to the project; the penalties for non-compliance; and the boundaries (work area) within which the project must be accomplished.
- d. A Service-approved biologist must be present at the work site until such time as all instruction of workers, transplanting of elderberry shrubs, relocating of listed species, and major habitat disturbance have been completed. After this time, Caltrans may designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist shall ensure that this individual receives the training as outlined above. The biological monitor must be present on-site every day that work is occurring within 500 feet of any vernal pool or environmentally sensitive area (ESA). The monitor and the Service-approved biologist shall have the authority to halt any action that might result in impacts that exceed the take levels anticipated by the Service during the review of the proposed action. Should a federally listed species be located within the project area during construction, both the Service-approved biologist and the biological monitor are exempt from the prohibitions of take under Section 9 of the Act for the one-time action of relocating the individual(s) to a safe area. If work is stopped, or a listed species is relocated to avoid take, the Service shall be notified immediately by the Service-approved biologist or on-site biological monitor.
- e. Roadways and disturbed areas within 100 feet of elderberry plants shall be watered daily to minimize dust emissions.

The following terms and conditions implement reasonable and prudent measure two (2):

- a. Implement the proposed conservation measures for the valley elderberry longhorn beetle, the vernal pool fairy shrimp, and the vernal pool tadpole shrimp, as described in the project description of this biological opinion and any associated environmental documents applicable to this project such as the BA and Environmental Impact Statement/Report. The only exceptions are as modified in these Terms and Conditions.
- b. The applicant must restrict all construction and repair work to the typical dry season, as specified in their Streambed Alteration Agreement with CDFG.
- c. All avoided wetlands, including vernal pools and swales, within the project footprint, shall be designated as environmentally sensitive areas (ESAs). No activities, including stockpiling soil, driving or parking any equipment or vehicles, storing supplies or containers, and creation of borrow pits shall be permitted within the ESAs. The wetlands shall be marked with bright orange fencing at least five feet tall, by the Service-approved biologist. Such fencing shall be adequate to prevent encroachment of construction personnel and equipment into vernal pool areas during project work activities. Not only shall the immediate boundaries of the vernal pools be protected but also the watershed that may be affected. The fencing shall buffer vernal pool areas by 250 feet, if possible. Such fencing shall be inspected and maintained daily until completion of the project, upon which it shall be removed. Adequate signage shall be placed on the fence to indicate areas to be avoided.
- d. Collection of native California shrub, forb, and grass species for the purposes of the revegetation effort must not occur within areas designated as Environmentally Sensitive Areas (ESAs) or any other habitat currently occupied by listed species or species of special concern. A Service-approved biologist must have oversight of the collection process and revegetation effort.
- e. General riparian vegetation, with the exception of elderberry shrubs, referenced in the in-stream and riparian proposed conservation measures of this opinion (*e.g.*, Items d and m), must be replaced at a minimum of 3:1 for shrubs and 5:1 for tree species, unless contradicted by CDFG. If revegetation restoration performance standards are not met, as proposed (*i.e.*, 80% success), remedial replanting must be implemented.
- f. Stockpiled topsoil and other construction materials (*e.g.*, soil, debris, *etc.*) must not be placed in areas where the materials may erode into vernal pools, swales, or other waterways through exposure to wind, rain, *etc.*

- g. Runoff from dust control, and oil or other chemicals used in other construction activities shall be retained in the construction site and prevented from flowing into adjacent vernal pool preserves. The runoff shall be retained in the construction site by creating small earthen berms, installing silt fences or hay-bale dikes, or implementing other measures on the construction site to prevent runoff from entering the protected pools.
 - h. The applicant must check and maintain construction equipment and vehicles operated in the project area daily to prevent leaks of fuels, lubricants or other fluids. The contractor(s) must have an approved Hazardous Materials Spill Prevention Plan before starting construction.
 - i. On-site erosion control methods must be in compliance with local Water Quality Control Board standards prior to their implementation at the project site, and must be implemented simultaneously with the initiation of excavation/construction activities. In addition, erosion control devices will be checked for integrity and repaired if needed, on a daily basis during and after construction.
 - j. Enhancement of the project area shall be accomplished by removal and proper disposal of all garbage and clean-up related materials during construction and immediately after project completion.
- 2. The following terms and conditions implement reasonable and prudent measure three (3):
 - a. Implement the proposed conservation measures for the valley elderberry longhorn beetle, the vernal pool fairy shrimp, and the vernal pool tadpole shrimp, as described in the project description of this biological opinion and any associated environmental documents applicable to this project such as the BA and Environmental Impact Statement/Report. The only exceptions are as modified in these Terms and Conditions.
 - b. Prior to any ground disturbance, at least 92.66 acres (2:1) credit shall be dedicated within a Service-approved vernal pool preservation bank, and preserved in perpetuity; or based on Service approval, 138.99 wetted-acres (3:1) of vernal pool habitat will be preserved under a conservation easement, in perpetuity. Preservation and/or creation of vernal pools at a non-bank site may be permitted, only with prior agreement and approval by the Service. If a non-bank site is chosen, FHWA shall be required to provide us with the following information: an approved conservation easement agreement, easement holder, management plan, funding for monitoring and management, success criteria, reporting requirements and schedule, creation plan and creation site suitability analysis.

- c. Prior to any ground disturbance, at least 29.33 acres (1:1) credit shall be dedicated within a Service-approved vernal pool creation bank, and preserved in perpetuity; or based on Service evaluation of site-specific conservation values, 58.66 acres (2:1) of vernal pool habitat will be created and monitored at a non-bank site as approved by the Service and preserved in perpetuity.
- d. Prior to any ground disturbance, in accordance with the Service's 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*, the FHWA shall transplant all affected elderberry shrubs, elderberry seedlings, and associated native species, at the appropriate compensation levels (per the table in the proposed conservation measures of this biological opinion), to a Service approved site, protected in perpetuity. Alternatively, FHWA will transfer all elderberry shrubs and purchase the appropriate amount of elderberry and associated native species credits, per the Service's 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (and per the table in the proposed conservation measures of this biological opinion), at a Service-approved valley elderberry longhorn beetle conservation bank. Should the number of elderberry plants to be transplanted result in over 22 plants (due to clumping of plants during initial surveys), FHWA shall notify the Service immediately to reinitiate consultation.
- e. Prior to any ground disturbing activity, a copy of the comprehensive compensation plan shall be submitted to the Service for inclusion in the administrative record of this consultation.
- f. The FHWA shall provide the Service with annual reports to describe the progress of implementation of all the commitments in the Conservation Measures and Terms and Conditions sections of this biological opinion. The first report is due January 31, the first year after any ground disturbance, and annually on January 31 thereafter until all terms and conditions and/or performance criteria are met.
- g. A post-construction compliance report prepared by the Service-approved biologist(s) shall be forwarded to the Chief, Endangered Species Division, at the Sacramento Fish and Wildlife Office within 60 calendar days of the completion of each project. This report shall detail: (1) dates that construction occurred; (2) pertinent information concerning the applicant's success in meeting project compensation measures; (3) an explanation of failure to meet such measures, if any, and recommendations for remedial actions and request for approval from the Service, if necessary; (4) known project effects on federally listed species, if any; (5) occurrences of incidental take of federally listed species, if any; and (6i) other pertinent information.
- h. The FHWA shall ensure compliance with the Reporting Requirements below.

- i. During or upon completion of construction activities, the Service may conduct an on-site inspection of the site.

Reporting Requirements

The Sacramento Fish and Wildlife Office is to be notified immediately by telephone, and in writing, within three working days of the finding of any listed species or any incidental take of species, other than that permitted in this biological opinion. The Service point of contact is the Chief, Endangered Species Division, at (916) 414-6700.

The FHWA shall require Caltrans to report to the Service immediately any information about take or suspected take of listed wildlife species not authorized in this opinion. The FHWA must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. The Service contact is the Service's Law Enforcement Office at (916) 414-6660.

Any contractor or employee who during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. The FHWA shall contact the CDFG immediately in the case of a dead or injured listed species. The CDFG contact for immediate assistance is State Dispatch at (916) 445-0045.

Any dead or severely injured valley elderberry longhorn beetles found (adults, pupae, or larvae) shall be deposited in the Entomology Department of the California Academy of Sciences. The Academy's contact is the Senior Curator of Coleoptera at (415) 750-7239. All observations of valley elderberry longhorn beetles - live, injured, or dead - or fresh beetle exit holes shall be recorded on CNDDDB field sheets and sent to the CDFG, Wildlife Habitat Data Analysis Branch, 1416 Ninth Street, Sacramento, California 95814.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. It is recommended that the FHWA work with the Service to address significant, unavoidable environmental impacts resulting from projects proposed by non-Federal parties.
2. It is recommended that the FHWA incorporate into bidding documents the Service's 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*, as appropriate.

3. It is recommended that the FHWA, in partnership with the Service, develop maintenance guidelines for the FHWA's projects that will reduce adverse effects of routine maintenance on valley elderberry longhorn beetle and vernal pool species and their habitat. Such actions may contribute to the delisting and recovery of these species by preventing degradation of existing habitat and increasing the amount and stability of suitable habitat.
4. Future road improvement/widening projects under the jurisdiction of the FHWA are anticipated throughout California. It is recommended that the FHWA, the Service, and all potential applicants develop a programmatic consultation similar to the 1997 Corps of Engineers programmatic biological opinion for projects with relatively small effects on federally listed species.
5. It is recommended that the FHWA protect and restore riparian and wetland habitats in the Sacramento River basin to increase habitat for the valley elderberry longhorn beetle and vernal pool species.
6. It is recommended that the FHWA assist in the implementation of the recovery plan for the valley elderberry longhorn beetle, and the vernal pool species once it is completed.
7. It is recommended that the FHWA conduct studies, review pertinent literature, and explore options that allow for construction of bridges by spanning channels with pre-cast techniques or without the use of in-water concrete to protect listed species dependent on this habitat.
8. It is recommended that the FHWA should develop and implement operations and maintenance standards to minimize effects of maintenance activities on the valley elderberry longhorn beetle, vernal pool species, and vernal pool and riparian habitats.
9. FHWA should not use mono-filament netting for erosion control or other purposes where snakes and other wildlife may become entrapped in it at the project site.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION–CLOSING STATEMENT

This concludes the reinitiation of formal consultation on the Upgrade of State Route 70 project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in

a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact Harry McQuillen of this office at the letterhead address or at (916) 414-6600 if you have any questions regarding this biological opinion or the proposed Highway Improvement Project, State Route 70/99/149/191.

Sincerely,

Cay C. Goude
Acting Field Supervisor

Enclosures

cc:

ARD-ES, Portland OR

Butte County Association of Governments, Chico, California (Attn: Jon Clark)

California Department of Fish and Game, Rancho Cordova, California (Attn: Terry Roscoe)

California Department of Fish and Game, Sacramento, California (Attn: D. Wareycia)

Caltrans, Office of Environmental Management, Marysville, California (Attn: Krishnan Nelson)

U.S. Army Corps of Engineers, Sacramento Valley Office, Sacramento, California (Attn: Tom Cavanaugh)

Addresses:

Mr. Jon Clark, Executive Director, Butte County Association of Governments, 965 Fir Street, Chico, California 95928

Ms. Terry Roscoe, Supervisor, Habitat Conservation Program, California Department of Fish and Game, 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670

Ms. Dee Wareycia, Natural Heritage Division, California Department of Fish and Game, 1416 9th Street, Sacramento, California 95814

Mr. Krishnan Nelson, Associate Environmental Planner, California Department of Transportation, Office of Environmental Management, 703 B. Street, P.O. Box 911, Marysville, California 95901

Mr. Tom Cavanaugh, Chief, Regulatory Branch, Sacramento District, U.S. Army Corps of Engineers, 1325 J Street, 14th Floor, Sacramento, California 95814-2922

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44577
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

November 13, 2002

In response please refer to:
SWR-00-SA-5867:FKF

Mr. Gary N. Hamby
Division Administrator
Federal Highway Administration
California Division
980 Ninth Street, Suite 400
Sacramento, CA 95814-2724

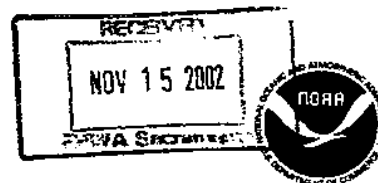
Dear Mr. Hamby:

This is in response to your letter dated October 8, 2002 requesting concurrence from the National Marine Fisheries Service (NOAA Fisheries) on a determination that implementing the proposed highway improvement project on State Route (SR) 149 in Butte County, between Chico and Oroville, is not likely to adversely affect Essential Fish Habitat (EFH) for Chinook salmon, specifically candidate Central Valley fall/late fall-run chinook salmon (*Oncorhynchus tshawytscha*).

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) propose to upgrade the 4.6 mile length of SR 149 between SRs 70 and 99 from a two-lane highway to a four-lane expressway, and construct freeway-to-freeway interchanges at the existing SR 70/149 and SR 99/149 intersections. The project would include construction of two additional lanes, realignment of SR 70 between SRs 149 and 191, and upgrading several interchanges. The highway spans several ephemeral creeks including Gold Run, Dry, Cottonwood, and Clear creeks. The Biological Assessment (BA), dated October 1, 2002, states that salmonid species are not expected to spawn or rear in the drainages within the project area. Proposed mitigation measures include an in-water work window from June 1 - October 15th, use of best management practices to minimize erosion or other impacts, and streamside vegetation restoration, as described in the BA.

Essential Fish Habitat

The creeks mentioned above have been identified as Essential Fish Habitat (EFH) for chinook salmon in Amendment 14 of the Pacific Salmon Fishery Management Plan pursuant to the



Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). Federal action agencies are mandated by MSFCMA (Section 305[b][2]) to consult with NOAA Fisheries on all actions that may adversely affect EFH, and NOAA Fisheries must provide EFH Conservation Recommendations (Section 305[b][4][A]). In order to minimize effects to EFH for Chinook salmon, we have the following conservation recommendations:


- Any affected areas of streambank would be restored by planting native vegetation, including trees, to provide for future shading and woody debris input.
- Bridge design shall insure stormwater runoff from the road and bridge is channeled off the roadway and bridge such that there is no direct discharge of untreated runoff into any waterways.
- No disturbance or placement of dredged or fill material, including concrete, shall be placed in any waters of the United States including wetlands with the exception of the bridge abutments which may be constructed out of flowing water through use of coffer dams, and the concrete shall be allowed to completely cure before coming in contact with creek flow.

The MSFCMA and Federal regulations (50 CFR Sections 600.920) to implement the EFH provisions of the MSFCMA require federal action agencies to provide a written response to EFH Conservation Recommendations within 30 days of their receipt. A preliminary response is acceptable if final action cannot be completed within 30 days. Your final response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendations, you must provide an explanation of the reasons for not implementing them. Adherence to the measures listed above would allow us to concur with your determination that implementation of the project, as proposed in the BA, would be not likely to adversely affect EFH for Pacific salmon.

If you have any questions or need further information please contact Ms. F. Kelly Finn at our Sacramento Area office at 650 Capitol Mall, Suite 8-300; Sacramento, CA 95814, or by telephone at (916)-930-3610.

Sincerely,



 Rodney R. McInnis
Acting Regional Administrator

cc: NMFS-PRD, Long Beach, CA
Stephen A. Meyer, ASAC, NMFS, Sacramento, CA



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CALIFORNIA DIVISION
980 Ninth Street, Suite 400
Sacramento, CA. 95814-2724

December 26, 2002

IN REPLY REFER TO
HDA-CA
File # 03-But-149 0.0/7.5
Interchanges and Widening
Document # P43034

Mr. Rodney R. McInnis, Acting Regional Administrator
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90802-4213

Dear Mr. McInnis:

This letter is in response to your letter of November 13, 2002 [SWR-00-SA-5867:MET] concerning Essential Fish Habitat (EFH) conservation recommendations. We apologize for the tardy response.

We accept the conservation measures identified in your November 13, 2002 letter to minimize impact to Chinook salmon. Thank you for your assistance in this matter.

Sincerely,

/s/ Brian K. Zewe
For
Gary N. Hamby
Division Administrator

Enclosure (P42597)

c:
(E-mail)
Gary Winters
John Webb
Brian Zewe
Stephanie Stoermer
Maiser Khaled

(mail)
F. Kelly Finn
Sue Bauer (w/copy of enclosure)

Appendix E Final NEPA/404(b)(1) Alternatives Analysis

A draft alternatives analysis was prepared in accordance with Federal Clean Water Act Section 404(b)(1)/NEPA integration process for the proposed SR 70/149/99/191 highway improvement project in Butte County.

This report provides the final alternatives analysis with a summary of the draft.

The purpose of the project is to improve traffic safety, maintain LOS C through the 20-year design period by reducing congestion and delays, and provide a continuous four-lane inter-regional transportation system between Oroville and Chico. This project purpose is consistent with the Federal regulatory requirements and has been approved by the appropriate Federal agencies.

A full range of alternatives was analyzed in the draft. The draft analysis of alternatives that would meet the defined project purpose and need found Alternative 3 to represent the Least Environmentally Damaging Practicable Alternative (LEDPA), as it would have the least impact to aquatic resources. Caltrans and FHWA received agreement to the LEDPA from the USEPA (letter dated August 30, 2002), and preliminary agreement from the USACOE (Letter dated September 3, 2002).

Compensatory mitigation is detailed in the table on the following page.

But-70/149/99/191 Biological Mitigation Summary

Resource/Species	Mitigation Requirement			Mitigation Location	Schedule
	Impact ha (ac)	Ratio	Total ha (ac)		
Vernal Pool Shrimp Habitat					
1. Preservation				Preserve 37.5 ha (92.7 ac) of vernal pool shrimp habitat at USFWS-approved mitigation bank, or purchase conservation easement at 3:1 ratio 56.2 ha (138.9 ac) on USFWS-approved conservation land	Prior to any ground disturbance, and/or prior to start of construction on or after April 15, 2004.
Direct Impacts	11.87 (29.33)	2:1	23.7 (58.7)		
Indirect Impacts	6.88 (17.0)	2:1	13.76 (34.0)		
2. Creation Direct Impacts	11.87 (29.33)	1:1	11.87 (29.33)	Create vernal pool shrimp habitat at USACOE/USFWS-approved site	
Butte County Meadowfoam					
Indirect Impacts	0.21 (0.53)	5:1	1.1 (2.7)	Contribution to multi-agency purchase of property containing established BCM population	Prior to any ground disturbance, and/or prior to start of construction on or after April 15, 2004.
Wetlands					
1. Freshwater Marsh	2.7 (6.7)	1.5:1	4.05 (10.0)	Create 4.05 ha (10.0 ac) of habitat on-site adjacent to beaver pond area	Contour grading will occur during construction of the SR 70/149 interchange. Revegetation will occur after the Notice of Completion of Construction (NOC) is sent by Caltrans to the Regional Water Quality Control Board via the Caltrans NPDES office. Permanent erosion control measures will be implemented as construction completes each stage of the project.
2. Mixed Riparian	0.97 (2.4)	1.5:1	1.46 (3.56)	Re-vegetate impact areas at creek crossings and created marsh habitat	Revegetation to occur after the NOC is sent to the RWQCB via the Caltrans NPDES office. Permanent erosion control measures will be implemented as construction completes each stage of the project.

3. Roadway Drainage	1.17 (2.9)	1:1	1.17 (2.9)	Replace drainage ditches in-kind on-site	New roadway drainage ditches will be constructed concurrent with construction of the roadway, and will be equal to or larger in volume than removed/filled ditches to achieve “no net loss” of habitat.
4. Jurisdictional Non-Wetland Waters	1.10 (2.72)	1.2:1	1.32 (3.27)	Mitigation will be out-of-kind by increasing functions of adjacent riparian habitat, mainly along Little Dry, Clear and Gold Run Creeks.	This mitigation is intended to compensate for lost aquatic resources below the ordinary high water mark and will occur with mixed riparian mitigation as stated above.
5. Other Wetlands	0.47 (1.16)	1.5:1	0.71 (1.74)	Mitigation out-of-kind will be added to mitigation for Mixed Riparian, Freshwater marsh, and Vernal Pool/Swale impact totals.	Prior to any ground disturbance, and/or prior to start of construction on or after April 15, 2004.
Valley Elderberry Longhorn Beetle (VELB)					
Direct Impacts	22 shrubs; 119 stems	5 stems per credit	24 credits	Payment to USFWS “VELB” fund; replacement planting and transplanting	Prior to any ground disturbance, and/or prior to start of construction on or after April 15, 2004.
Central Valley Chinook salmon					
Essential Fish Habitat	0.89 (2.2)	1:1	0.89 (2.2)	Revegetation at bridge crossings and creek banks to ensure “no net loss” of habitat	Permanent erosion control measures will be implemented as construction completes each stage of the project. Permanent revegetation to occur after the Notice of Completion of Construction is sent to the RWQCB via the Caltrans NPDES office.
Swainson’s hawk					
Potential Foraging Habitat	63.1 (155.8)	1:1	63.1 (155.8)	Covered with preservation of vernal pool shrimp habitat (upland component)	Pre-construction survey will determine presence/absence of nests.
Northwest Pond Turtle					
Marsh habitat	1.87 (4.61)	1:1	1.87 (4.61)	Covered under mitigation for marsh	Permanent erosion control measures will be implemented as construction completes each stage of the project. Contour grading will occur during construction of the SR 70/149 interchange. Permanent revegetation will occur after the Notice of Completion of Construction is sent by Caltrans to the RWQCB via the Caltrans NPDES office.
Oak Woodlands					
Permanent Impacts	0.55 (1.37)	1:1	0.55 (1.37)	Replacement planting on-site	Permanent erosion control measures will be implemented as construction completes each stage of the project. Permanent revegetation to occur after the Notice of Completion of Construction is sent to the RWQCB via the Caltrans NPDES office.

Appendix F Wetlands Only Practicable Alternative

WETLANDS ONLY PRACTICABLE ALTERNATIVE FINDING

Pursuant to: Executive Order 11990 – Protection of Wetlands

The proposed project will widen State Routes 70/149/99 in Butte County.

Alternatives

Alternative 1

This alternative would upgrade SR 149 to a four-lane expressway by adding two lanes on the south side of the existing roadway. Widening would begin at the proposed SR 70/149 interchange and end at the proposed SR 99/149 interchange, a distance of 7.5 km (4.6 mi).

Roadway

Alternative 1 would include the following roadway construction:

- Two 3.6 m (12 ft) lanes with an 18.6 m (60 ft) or 22 m (72 ft) median; 1.5 m (5 ft) median shoulder and 3.0 m (10 ft) outside shoulder,
- realignment of SR 70 between SRs 149 and 191,
- reconstruction of the SR 70/191 intersection,
- construction of driveway access roads,
- rehabilitation of the existing SR 149 roadway,
- construction of county roads including a portion of Shippee Road, Table Mountain Blvd. and the Book Farm road,
- construction of a drainage system to eliminate ponding within the right-of-way on the north side of SR 149 near the junction with SR 70.

Structures

Alternative 1 would require the following structures:

- freeway-to-freeway interchanges (direct connector) at the SR 70/149 and 99/149 intersections,
- two-lane bridges with shoulders over Dry Creek, Clear Creek, Little Dry Creek,
- four-lane bridge with shoulders on new SR 70 alignment at Gold Run Creek.

This alternative would also require a one-lane crossing over SR 149 to Openshaw Road for access to the Warren and Brown parcels (APNs 041-210-052, 041-200-041) south of SR 149. This over-crossing would function as a private driveway, with a locked gate provided at the north end.

Alternative 2

Alternative 2 would be similar to Alternative 1, except the additional lanes would be constructed on the north side of SR 149.

Alternative 3

Alternative 3 is also similar to Alternative 1, except the additional lanes would be constructed on the north side of SR 149 from the proposed SR 70/149 interchange to KP 4.1 (PM 2.6), and then transition to the south side from KP 4.1 (PM 2.6) to the proposed SR 99/149 interchange.

Measures to Minimize Harm

The following measures have been developed to minimize the environmental impacts to wetlands along State Routes 70/149/99:

1. Compensation for impacts will include the following:
 - Preservation and/or creation of habitat at a ratio and location (mitigation bank) approved by the U.S. Fish and Wildlife Service.
 - Restoration of habitat on-site.
2. Erosion control measures will be performed during and after construction of the project.

Findings

Based upon the above considerations, it is determined that there is no practicable alternative to the proposed new construction in wetlands and the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

Appendix G Summary of Mitigation and Monitoring Commitments

But-70/149/99/191 Biological Mitigation Summary

Resource/Species	Mitigation Requirement			Mitigation Location	Schedule
	Impact ha (ac)	Ratio	Total ha (ac)		
Vernal Pool Shrimp Habitat					
1. Preservation				Preserve 37.5 ha (92.7 ac) of vernal pool shrimp habitat at USFWS-approved mitigation bank, or purchase conservation easement at 3:1 ratio 56.2 ha (138.9 ac) on USFWS-approved conservation land	Prior to any ground disturbance, and/or prior to start of construction on or after April 15, 2004.
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2. Mixed Riparian	0.97 (2.4)	1.5:1	1.46 (3.56)	Re-vegetate impact areas at creek crossings and created marsh habitat	Revegetation to occur after the NOC is sent to the RWQCB via the Caltrans NPDES office. Permanent erosion control measures will be implemented as construction completes each stage of the project.

3. Roadway Drainage	1.17 (2.9)	1:1	1.17 (2.9)	Replace drainage ditches in-kind on-site	New roadway drainage ditches will be constructed concurrent with construction of the roadway, and will be equal to or larger in volume than removed/filled ditches to achieve “no net loss” of habitat.
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Essential Fish Habitat	0.89 (2.2)	1:1	0.89 (2.2)	Revegetation at bridge crossings and creek banks to ensure “no net loss” of habitat	Permanent erosion control measures will be implemented as construction completes each stage of the project. Permanent revegetation to occur after the Notice of Completion of Construction is sent to the RWQCB via the Caltrans NPDES office.
Swainson’s hawk					
Potential Foraging Habitat	63.1 (155.8)	1:1	63.1 (155.8)	Covered with preservation of vernal pool shrimp habitat (upland component)	Pre-construction survey will determine presence/absence of nests.
Northwest Pond Turtle					
Marsh habitat	1.87 (4.61)	1:1	1.87 (4.61)	Covered under mitigation for marsh	Permanent erosion control measures will be implemented as construction completes each stage of the project. Contour grading will occur during construction of the SR 70/149 interchange. Permanent revegetation will occur after the Notice of Completion of Construction is sent by Caltrans to the RWQCB via the Caltrans NPDES office.
Oak Woodlands					
Permanent Impacts	0.55 (1.37)	1:1	0.55 (1.37)	Replacement planting on-site	Permanent erosion control measures will be implemented as construction completes each stage of the project. Permanent revegetation to occur after the Notice of Completion of Construction is sent to the RWQCB via the Caltrans NPDES office.

Appendix H USFWS Species List

**Federal Endangered and Threatened Species that
may be affected by projects in Butte County**

Database Last Updated: July 23, 2002

Today's Date is: September 27, 2002

Listed Species

Invertebrates

Branchinecta conservatio - Conservancy fairy shrimp (E)

Branchinecta lynchi - vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus - valley elderberry longhorn beetle (T)

Lepidurus packardii - vernal pool tadpole shrimp (E)

Fish

Hypomesus transpacificus - delta smelt (T)

Oncorhynchus mykiss - Central Valley steelhead (T) (NMFS)

Oncorhynchus tshawytscha - winter-run chinook salmon (E) (NMFS)

Pogonichthys macrolepidotus - Sacramento splittail (T)

Amphibians

Rana aurora draytonii - California red-legged frog (T)

Reptiles

Thamnophis gigas - giant garter snake (T)

Birds

Haliaeetus leucocephalus - bald eagle (T)

Plants

Chamaesyce hooveri - Hoover's spurge (T)

Limnanthes floccosa ssp. *californica* - Butte County (Shippee) meadowfoam (E)

Orcuttia pilosa - hairy Orcutt grass (E)

Tuctoria greenei - Greene's tuctoria (=Orcutt grass) (E)

Candidate Species

Fish

Oncorhynchus tshawytscha - Central Valley fall/late fall-run chinook salmon (C) (NMFS)

Amphibians

Ambystoma californiense - California tiger salamander (C)

Birds

Coccyzus americanus occidentalis - Western yellow-billed cuckoo (C)

Species of Concern

Invertebrates

Anthicus sacramento - Sacramento anthicid beetle (SC)

Cicindela hirticollis abrupta - Sacramento Valley tiger beetle (SC)

Linderiella occidentalis - California linderiella fairy shrimp (SC)

Fish

Acipenser medirostris - green sturgeon (SC)

Lampetra ayresi - river lamprey (SC)

Spirinchus thaleichthys - longfin smelt (SC)

Amphibians

Rana boylei - foothill yellow-legged frog (SC)

Rana cascadae - Cascades frog (SC)

Rana muscosa - mountain yellow-legged frog (SC)

Spea hammondi - western spadefoot toad (SC)

Reptiles

Clemmys marmorata marmorata - northwestern pond turtle (SC)

Masticophis flagellum ruddocki - San Joaquin coachwhip (=whipsnake) (SC)

Phrynosoma coronatum frontale - California horned lizard (SC)

Birds

Accipiter gentilis - northern goshawk (SC)

Agelaius tricolor - tricolored blackbird (SC)

Ammodramus savannarum - grasshopper sparrow (SC)

Asio flammeus - short-eared owl (SC)

Athene cunicularia hypugaea - western burrowing owl (SC)

Baeolophus inornatus - oak titmouse (SLC)

Botaurus lentiginosus - American bittern (SC)

Branta canadensis leucopareia - Aleutian Canada goose (D)

Buteo regalis - ferruginous hawk (SC)

Buteo Swainsoni - Swainson's hawk (CA)

Carduelis lawrencei - Lawrence's goldfinch (SC)

Chaetura vauxi - Vaux's swift (SC)

Chlidonias niger - black tern (SC)

Cinclus mexicanus - American dipper (SLC)

Contopus cooperi - olive-sided flycatcher (SC)

Cypseloides niger - black swift (SC)

Dendroica occidentalis - hermit warbler (SC)

Egretta thula - Snowy Egret (MB)

Empidonax traillii brewsteri - little willow flycatcher (CA)

Falco peregrinus anatum - American peregrine falcon (D)

Gavia immer - common loon (SC)

Grus canadensis tabida - greater sandhill crane (CA)

Lanius ludovicianus - loggerhead shrike (SC)

Melanerpes lewis - Lewis' woodpecker (SC)

Picoides albolarvatus - white-headed woodpecker (SLC)

Picoides nuttallii - Nuttall's woodpecker (SLC)

Plegadis chihi - white-faced ibis (SC)

Riparia riparia - bank swallow (CA)

Selasphorus rufus - rufous hummingbird (SC)

Strix occidentalis occidentalis - California spotted owl (SC)

Toxostoma redivivum - California thrasher (SC)

Mammals

Corynorhinus (=Plecotus) *townsendii pallescens* - pale Townsend's big-eared bat (SC)

Corynorhinus (=Plecotus) *townsendii townsendii* - Pacific western big-eared bat (SC)

Dipodomys californicus eximius - Marysville Heermann's kangaroo rat (SC)

Euderma maculatum - spotted bat (SC)

Eumops perotis californicus - greater western mastiff-bat (SC)
Lepus americanus tahoensis - Sierra Nevada snowshoe hare (SC)
Martes pennanti pacifica - Pacific fisher (SC)
Myotis ciliolabrum - small-footed myotis bat (SC)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)
Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)
Perognathus inornatus - San Joaquin pocket mouse (SC)

Plants

Agrostis hendersonii - Henderson's bent grass (SC)
Allium jepsonii - Jepson's onion (SC)
Astragalus tener var. *ferrisiae* - Ferris's milk-vetch (SC)
Atriplex cordulata - heartscale (SC)
Atriplex depressa - brittlescale (SC)
Atriplex minuscule - lesser saltscale (SC)
Atriplex subtilis - subtle orache (SLC)
Balsamorhiza macrolepis var. *macrolepis* - big-scale (=California) balsamroot (SLC)
Botrychium ascendens - upswept moonwort (SC)
Botrychium crenulatum - scalloped moonwort (SC)
Calycadenia oppositifolia - Butte County calycadenia (=Butte County western rosinweed) (SLC)
Calystegia atriplicifolia ssp. *butensis* - Butte County morning-glory (SC)
Castilleja rubicundula ssp. *rubicundula* - pink creamsacs (SLC)
Clarkia biloba ssp. *brandegeae* - Brandegee's clarkia (SLC)
Clarkia gracilis ssp. *albicaulis* - white-stemmed (=whitestem) clarkia (SLC)
Clarkia mosquinii ssp. *mosquinii* - Mosquin's clarkia (SC)
Clarkia mosquinii ssp. *xerophila* - Enterprise clarkia (SC)
Cypripedium fasciculatum - clustered lady's-slipper (SC)
Fritillaria eastwoodiae - Butte fritillary (SC)
Fritillaria pluriflora - adobe lily (SC)
Juncus leiospermus var. *ahartii* - Ahart's (dwarf) rush (SC)
Juncus leiospermus var. *leiospermus* - Red Bluff (dwarf) rush (SC)
Lewisia cantelowii - Cantelow's lewisia (SC)
Lupinus dalesiae - Quincy lupine (SC)
Monardella douglasii ssp. *venosa* - veiny monardella (SC)
Myosurus minimus ssp. *apus* - little mousetail (SC)
Paronychia ahartii - Ahart's whitlow-wort (=Ahart's paronychia) (SC)
Penstemon personatus - closed-lip (closed-throated) beardtongue (SC)
Rhynchospora californica - California beaked-rush (SC)
Rupertia hallii - Hall's rupertia (=Hall's California tea) (SLC)
Sagittaria sanfordii - valley sagittaria (=Sanford's arrowhead) (SC)
Sedum albomarginatum - Feather River stonecrop (SC)
Sidalcea robusta - Butte County sidalcea (=checkerbloom) (SC)
Silene occidentalis ssp. *longistipitata* - Butte County catchfly (=long-stiped campion) (SC)
Trifolium jokerstii - Butte County golden (=Jim's) clover (SLC)

Species with Critical Habitat Proposed or Designated in this County

California red-legged frog (T)
Central Valley fall/late fall-run chinook (C)
Central Valley spring-run chinook (T)
Central Valley steelhead (T)
winter-run chinook salmon (E)

Key:

(E) Endangered - Listed (in the Federal Register) as being in danger of extinction.
(T) Threatened - Listed as likely to become endangered within the foreseeable future.
(P) Proposed - Officially proposed (in the Federal Register) for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Marine Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
(C) Candidate - Candidate to become a proposed species.
(CA) Listed by the State of California but not by the Fish & Wildlife Service.
(D) Delisted - Species will be monitored for 5 years.
(SC) Species of Concern/(SLC) Species of Local Concern - Other species of concern to the Sacramento Fish & Wildlife Office.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

This is *not* an official list for formal consultation under the Endangered Species Act. *However, it may be used to update official lists.*

If you have a project that may affect endangered species, please contact the Endangered Species Division, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service.

Appendix I Relocation Assistance Advisory Service

RELOCATION ASSISTANCE ADVISORY SERVICE

BENEFITS PROVIDED TO RELOCATEES PURSUANT TO LAW

The acquisition and relocation program will be conducted in accordance with the **Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended**. Relocation resources are available and will be provided to all residential and business relocatees without discrimination.

The Department of Transportation provides relocation advisory assistance to any person, business, farm or non-profit organization displaced as a result of the Department's acquisition of real property for public use. The Department assists displacees in obtaining replacement housing by providing current and continuing information on the availability and prices of houses for sale and rental units that are comparable, "decent, safe and sanitary". Mobile home owner occupants renting space may receive a combination of replacement housing benefits due to owner/tenant status. Non-residential displacees will receive information on comparable properties for lease or purchase.

Residential replacement dwellings will be in equal or better neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, comparable replacement dwellings will be offered to displacees that are fair housing open to all persons, consistent with the requirements of Title VI of the Civil Rights Act of 1968.

Residential Relocation Payments Program

The Relocation Payment Program will help eligible residential occupants by paying costs and expenses. These costs are limited to those necessary for the purchase or rent of a replacement dwelling and actual reasonable moving expenses to a new location within a 50-mile radius of the displacee's property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. The Residential Relocation Program can be summarized as follows:

Moving Costs

Any displaced person who was lawfully in occupancy of the acquired property regardless of length of occupancy therein, will be eligible for reimbursement of moving costs. Displacees will receive either the actual reasonable costs involved in moving themselves and personal property up to a maximum of 50 miles, a moving service authorization, or a fixed payment based on a fixed moving cost schedule which is

determined by the number of furnished or unfurnished rooms of the displacement dwelling.

Purchase Supplement

In addition to moving and related expense payments, fully eligible homeowners may be entitled to payments for increased costs of replacement housing.

Homeowners who have owned and occupied their property for 180 days or more prior to the date of the first written offer to purchase the property, may qualify to receive a price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property.

The price differential payment is made when the Department determines that the cost to purchase a comparable and "decent, safe and sanitary" replacement dwelling will be more than the present cost of the displacement dwelling. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate. The maximum amount of supplemental payment that the owner-occupants can receive is \$22,500.00. If the total entitlement (without moving payments) is in excess of \$22,500.00, the Last Resort Housing Program (LRHP) will be used.

Rental Supplement

Tenants who have occupied the property to be acquired by the Department for 90 days or more and owner-occupants of 90 days or more prior to the date of the first written offer to purchase, may qualify to receive a rental differential payment. This payment is made when the Department determines that the cost to rent a comparable and decent, safe and sanitary replacement dwelling will be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase of a replacement property. Once the eligibilities are determined, occupants of the residential care home will be eligible for tenant relocation benefits and their individual needs will be considered. The maximum amount payment to any tenant of 90 days or more and any owner-occupant of 90 days or more, in addition to moving expenses, will be \$5,250.00. If the total entitlement for rental supplement exceeds \$5,250.00, LRHP will be used.

Last Resort Housing

The State Department of Transportation, adopted federal guidelines for implementing the LRHP. Last resort housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard relocation as explained above. LRHP has been designed primarily to cover situations

where comparable replacement housing is unavailable, or when their anticipated replacement housing payments exceed the \$5,250.00 and \$22,500.00 limits of the standard relocation procedures. In certain exceptional situations, LRHP may also be used for tenants of less than 90-days.

After the first written offer to acquire the property has been made, the Department will, within a reasonable length of time, personally contact the displacees to gather important information relating to:

- Preferences in area of relocation;
- Number of people to be displaced and the distribution of adults and children according to age and sex;
- Location of school and employment;
- Special arrangements to accommodate any handicapped member of the family;
- Financial means to relocate into comparable replacement dwelling which is decent, safe and sanitary.

The Business and Farm Relocation Assistance Program

The Business and Farm Relocation Assistance Program provides for aid in locating suitable replacement property, and reimbursement for certain costs involved in relocation. The Relocation Advisory Assistance Program can provide, when requested, a current list of properties offered for sale or rent, suitable for specific relocation needs.

The types of payments available to businesses, farms and non-profit organizations can be summarized as follows:

Moving expenses include the following actual reasonable costs:

The moving of inventory, machinery, office equipment and similar business-related personal property dismantling, disconnecting, crating, packing, loading, insuring, transporting, unloading, unpacking, and reconnecting of personal property.

Loss of tangible personal property provides payment to relocatee for "actual direct" losses of personal property that the owner elects not to move.

Expenses related to searching for a new business site can be reimbursed up to \$1,000.00 for actual reasonable cost incurred.

Reestablishment expenses up to \$10,000.00 relating to the new business operation.

In lieu payment (instead of the above payments). Payment "in Lieu" of moving and reestablishment expenses is available to businesses and farms which are assumed to

suffer a substantial loss of existing patronage as a result of the displacement, or if certain other requirements such as inability to find a suitable relocation site are met.

This payment is an amount equal to the average annual net earnings for the last 2 taxable years prior to relocation. Such payment may not be less than \$1,000.00 and not more than \$20,000.00.

Additional Information

Reimbursement for moving costs and replacement housing payments are not considered income for the purpose of the Internal Revenue Code of 1954, or sources for the purpose of determining the extent of eligibility of a displacee for assistance under the Social Security Act, local Section 8 housing programs, or other federal assistance programs.

Persons whom are eligible for relocation payments and who are legally occupying the property required for the project will not be asked to move without being given at least 90 days advance notice, in writing. Occupants of any type of dwelling eligible for relocation payments will not be required to move unless at least one comparable "decent, safe and sanitary" replacement residence, open to all persons, regardless of race, color, religion, sex or national origin is available, or has been made available to them by the State.

Any persons, business, farm or nonprofit organization which has been refused a relocation payment by the Department of Transportation, or believes that the payments are inadequate, may appeal for a special hearing of the complaint. No legal assistance is required, however, the displacee may choose to obtain legal council, but at their own expense. Information about the appeal procedure is available from Department of Transportation relocation advisors.

The information above is not intended to be a complete statement of all the Department's laws and regulations. At the time of the first written offer to purchase, owner-occupants are given a more detailed explanation of the State's relocation services. Tenant occupants of properties to be acquired are contacted immediately after the first written offer to purchase, and also given a more detailed explanation of the Department's relocation programs.